

Strategic Skills Initiative Skills Shortage ID Report Cover Sheet

Economic Growth Region # 11 : Southwestern Indiana

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Strategic Skills Initiative

Economic Growth Region 11

Phase I Report

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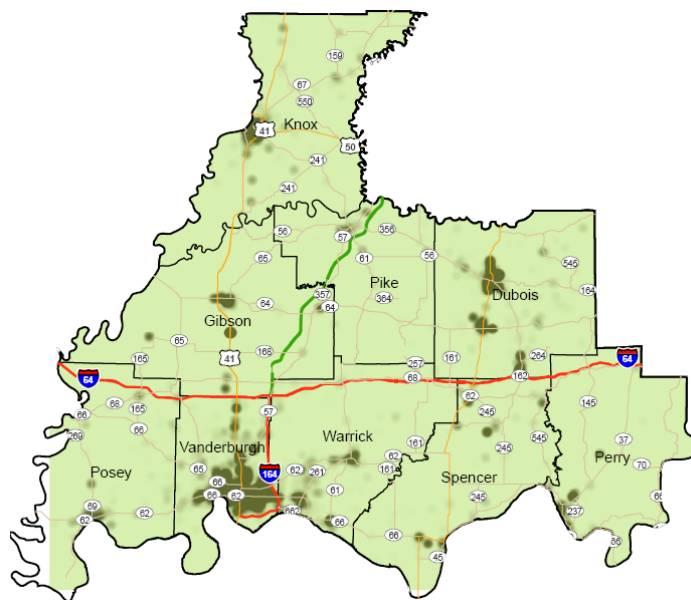


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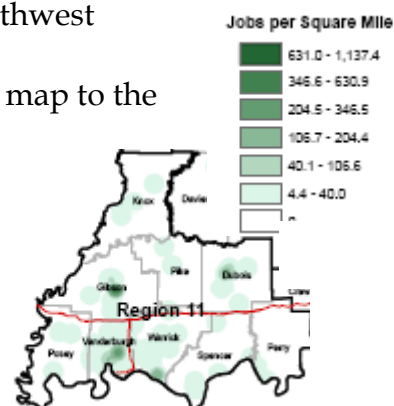
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Executive Summary

Industries: Manufacturing is Taking Care of Business and Health Care is Taking Care of People

Manufacturing has long been an economic driver in southwest Indiana, as it has for the state as a whole. Advanced manufacturing jobs can be found in every county (see map to the right), with high concentrations in Vanderburgh and Gibson Counties. Over a fifth (21.9%) of all employment in the region is in manufacturing establishments. Although manufacturing jobs overall are fewer than they were several years ago, much of the reduced employment is due to increased productivity, new technology, and lean manufacturing practices. Some subsectors of manufacturing are nevertheless gaining jobs, notably Plastics and Rubber Manufacturing and Transportation Equipment. Transportation Equipment relies on products from related subsectors, creating a cluster of inter-dependent industries. Furniture and Related Products is outside the cluster, does not pay as well and has many fewer workers now than it did five years ago, however, its large size (over 8,000 workers) and significance to the economy can not be overlooked. The manufacturing subsectors prioritized for targeting in EGR 11 are:



Cluster 1	Cluster 2	Independent Subsector
Transportation Equipment Nonmetallic Mineral Products Primary Metal Fabricated Metal Machinery Electrical Equipment	Chemical Plastics and Rubber Products	Furniture and Related

In addition to manufacturing, Region 11 selected **Mining** and **Utilities**. Mining has regional interest due to significant mining activities in the northern part of the region, specifically, the mining (except oil and gas) subsector. This subsector accounted 90% of the jobs in mining in 2005. Utilities is not subdivided; the single subsector (also called utilities) provide 2,726 jobs in the region with an annual average wage of \$61,284 in 2004.

Health care is not only growing as an industry, but is highly competitive. Because communities across the nation seem to be suffering similar skill shortages, failure to target health care now will only compound the situation in the future as the best and brightest candidates for health care jobs find opportunities in regions that have worked to resolve their own shortages. EGR 11 has targeted the two largest and growing subsectors, which share many of the same skill issues:

- ◆ Ambulatory Health Care
- ◆ Hospitals.

Occupations: Skills Transfer Easily Across Technical Job Families

The occupations selected for manufacturing were chosen based on their importance to the key industries (as determined through interviews), high demand, good earnings and benefits, appropriateness for targeting by the workforce system, and related skill sets.

Primary Focus	Secondary Focus	Emerging Focus
Industrial Machine Maintenance Maintenance and Repair Workers, General Maintenance Workers, Machinery	Electricians (primarily industrial) Electrical and Electronic Engineering Technicians Industrial Engineering Technicians Mechanical Engineering Technicians	Materials Compliance Specialist Quality Control Crew Leaders – production line

EGR 11 will focus on the primary occupations for this initiative. The secondary occupations have many interchangeable skill sets with the primary, and we anticipate the secondary focus will benefit from our efforts overall to resolve shortages in *skills* rather than just occupations. The “emerging focus” suggests skills that may be needed in the long term, but that are not currently in short supply. The positions were identified by the Bureau of Labor Statistics.

Manufacturing workers work primarily with *things* while health care providers work primarily with *people*. Clinical positions in health care require a different set of interests, abilities, knowledge, and sensitivities, which is why dislocated manufacturing workers are not always suitable for, nor interested in, retraining for the many shortages in health care. While health care has a broad variety of non-clinical and technical jobs, it is the direct care occupations that tend to be more difficult to fill.

In EGR 11, employers report shortages in the following occupations:

Primary Focus	Secondary Focus	Emerging Focus
Registered Nurses Licensed Practical Nurses	Medical Imaging Technicians Respiratory Therapists	Tissue & Eye Bank Technician Genetic Counselor Tissue Process Technician

The primary and secondary occupations are in high demand, pay well, and are appropriate for targeting by the workforce system. Employers have indicated that the medical imaging shortage is mostly cyclical and related to the school year. Neither they nor the respiratory therapist positions are as difficult to fill as registered nurses and licensed practical nurses, so EGR 11 will prioritize these occupations for purposes of this project. The “emerging focus” includes jobs that the U.S. Department of Labor has identified as new and emerging in health care, but which are not yet on the horizon in Southwestern Indiana.

Methodology

The methodology used to select key industries and subsectors included:

Selection of Key Industries:

- Use of secondary research, including national publications such as “2005 Skills Gap Report – A Survey of the American Manufacturing Industry” and “Statewide Survey of Nursing Students and Faculty” the Indiana Nursing Workforce Development Coalition and “Region 11 Economic Development Strategy.”
- Use of secondary data bases, including those from the DWD data packets on the website.
- Application of primary selection criteria to the data.
- Insights of the Regional Coalition and Lead Team.

Selection of Industry Subsectors:

- Use of secondary data research from the DWD website.
- Application of primary selection criteria to the data.
- Insights of the Regional Coalition and Lead Team.

Selection of Occupations:

- Primary data from interviews with employers in the subsectors.
- Insights of the Regional Coalition and Lead Team.

Participation and Endorsement of the Regional Consortium

The Consortium consists of 71 representatives from the following areas in EGR 11: 34% Business/Industry, 21% Education/Training, 18% Economic Development, 17% Workforce Development and 10% Local Government Officials and first met on October 4, 2005. The Consortium was introduced to the purpose, components, and sequencing of the SSI project. The members were given the opportunity to prioritize occupational clusters with respect to current or potential future skill shortages. Advanced Manufacturing and Health Care Services were given the highest priority by 46% and 36% by those in attendance, respectively.

During the research process, the SSI Lead Team, a core group of Consortium members, was kept apprised of research progress and findings. Various members of the Consortium participated in interview and focus group activities undertaken as part of the skill shortage identification research.

The Consortium and Validation Team reviewed the draft report findings prior to submission to Indiana Department of Workforce Development.

The appendices contain the regional Consortium membership, which demonstrates participation from across the entire region.

Section 1: Methodology

Use of Recommended Methodology and Web-Based Training

Participants in the web-based training provided by DWD included members of the SSI Implementation Team:

- Jim Julian, Sector Strategy Coordinator
- Charles Roche, Executive Director, Shawnee Trace Workforce Investment Board
- Jerry Yezbick, Executive Director, Southwest Workforce Investment Board
- Jeff Amos, Policy/Planning Director, Southwest Workforce Investment Board
- Sheila Hess, Director of Administration, Vincennes University

Along with the Guidebook, the web-based training provided direction to the research. The methodology instruction was particularly helpful as the Team was not experienced in this level of research. There was no alternative methodology used.

Explanation of Methodology

1. Selection of Industries at the 2-Digit Level

The SSI Implementation Team gathered data on two-digit NAICs industries to present to the Lead Team, a core group of Consortium members. Factors evaluated in the selection of Industries at the 2-Digit Level included:

- ◆ Size of employment, which represents employment opportunity as well as economic importance and total aggregate wages.
- ◆ Shift share analysis, which takes into consideration national job growth factors as well as industry sector changes that also account for net job changes. 1994 was used as the based year for long-term trends.
- ◆ Growth: historical data as well as local knowledge of current events that may impact growth and overall national/global trends in the industry. Growth in employment as well as growth in establishments was examined.
- ◆ Wages: average annual wage per job.
- ◆ Location quotient, which compares the proportion of the population employed in a sector in one region to the state and nation, and is one indicator of a regional competitive advantage.

Tables showing the quantitative data for the above elements are contained in the Appendices.

The SSI Consortium Lead Team and Implementation Team weighed this information along with the results of the first meeting of the Consortium and secondary data gleaned from such sources as “2005 Skills Gap Report – A Survey of the American Manufacturing Industry” and “Statewide Survey of Nursing Students and Faculty” the Indiana Nursing Workforce Development Coalition and “Region 11 Economic Development Strategy.”

The Consortium had brainstormed occupations with shortages prior to a discussion of industries. The vast majority of occupations fell into manufacturing and health care.

The Implementation Team also examined Mining and Utilities. Mining added 418 jobs, an increase of 27.1% from 2000-2004. Utilities also experienced an increase, adding 2.1% during the same period (57 jobs). Wages in mining and utilities are very high, with average annual wages of \$57,128 and \$61,284 respectively.

With those insights as well as the extensive knowledge about the region, manufacturing, mining, utilities, and health care were selected for focus.

2. Selection of Subsectors

The Manufacturing Sector is subdivided into 21 subsectors (see Appendices for the complete table). Considerations given to the subsectors include:

- ◆ **Number of establishments**, which is an indicator of vitality. The subsectors varied from 3 in Beverage and Tobacco Products and Apparel, to 85 in Fabricated Metal Products.
- ◆ **Number of jobs**, again representing employment opportunity and the economic impact of total wages. The subsectors range from five in Apparel Manufacturing to 8,187 in Furniture Manufacturing.
- ◆ **Average wage per job**, to identify which subsectors pay more than the average wage of all jobs in the region. The range extends from \$9,124 in Apparel manufacturing to \$72,209 in Chemical Manufacturing.
- ◆ **Growth in employment**. Transportation Equipment Manufacturing has experienced an 84.8% increase in employment between 2000 and 2004 while Furniture and Related experienced a -16.2% decline;
- ◆ **Wage growth**. Transportation Equipment Manufacturing has experienced a 30.8% growth, compared to only a 4.5% increase in average annual wages for Nonmetallic Mineral Products.
- ◆ **Potential cluster relationship**.

Beverage and Tobacco Product Manufacturing, Textile Mills, Textile Product Mills, Apparel Manufacturing, Leather and Applied Products, Wood Products, and Print and Related Support Activities were quickly eliminated due to their relatively small regional impact and/or low average wages per job.

In addition, while subsectors such as Paper Manufacturing, Petroleum and Coal Products, Computer and Electronic Products, and Miscellaneous Manufacturing had high average wages per job, they produced relatively few jobs in the region.

The final subsector eliminated was Food Manufacturing. This subsector had average wages just below the average for the region and contained over 2500 jobs in 2004, however its is not a part of the Transportation Manufacturing Cluster that has been developing in the region nor does it have a significant size impact on the region, as in the case of Furniture Manufacturing with 8,187 jobs.

The Manufacturing subsectors with the most jobs in 2004 were:

- ◆ Furniture and Related Products
- ◆ Transportation Equipment
- ◆ Plastics and Rubber Products
- ◆ Chemical.

These four subsectors accounted for 24,978 jobs, or 55% of all jobs in the manufacturing sector. The Manufacturing subsectors that will be further investigated to identify critical occupations and critical skill shortages are shown in the following page.

Average Annual Wage Per Job and Job growth for selected Manufacturing Subsectors, 2000 to 2004

NAICS	Manufacturing Subsector	Job		Avg Annual Wage	
		2004	Change 2000-2004	2004	Change 2000-2004
	Region 11 Total All Sectors	206,826	-0.80%	\$33,341	14.70%
325	Chemical Manufacturing	4,472	-15.90%	\$72,209	17.10%
326	Plastics and Rubber Products Manufacturing	5,133	4.00%	\$35,416	11.90%
327	Nonmetallic Mineral Product Manufacturing	1,556	-0.10%	\$41,892	4.50%
331	Primary Metal Manufacturing	3,670	-10.20%	\$62,972	4.70%
332	Fabricated Metal Product Manufacturing	2,095	-25.10%	\$34,453	5.10%
333	Machinery Manufacturing	1,190	-31.10%	\$43,610	12.50%
335	Electrical Equipment, Appliance, and Component Manufacturing	3,320	-9.80%	\$47,847	12.40%
336	Transportation Equipment Manufacturing	7,186	84.80%	\$58,624	30.80%
337	Furniture and Related Product Manufacturing	8,187	-16.20%	\$34,171	13.70%

Data sources: Indiana Business Research Center based on ES202 data, U.S. Bureau of Labor Statistics
 Provided by: Indiana Business Research Center, IU Kelley School of Business

The selection of these subsectors was based upon their impact on the region with respect to jobs, average annual wages and the subsectors' relationship with other subsectors in the region. For example, Primary Metal, Fabricated Metal Manufacturing, Machinery, Electrical Equipment, and Nonmetallic Mineral Product Manufacturing are components of the Transportation Equipment Manufacturing Cluster. The other subsectors, Chemical, Plastics and Rubber, and Furniture and Related Product Manufacturing, are significant to the region in themselves and in some cases also overlap with the developing Transportation Manufacturing Cluster such as Red Spot, a paint company, which sells many products to Transportation Equipment Manufacturers.

The transportation manufacturing cluster is sensitive to several factors.

Negative Sensitivities	Positive Sensitivities
Rising fossil fuel costs Foreign Competition Global/national economic conditions Rising health insurance costs; Employers are facing 20% to 30% health insurance increases yearly. Employers have dealt with it by: shifting carriers yearly, shifting more financial responsibility to employees, eliminating health care as a benefit (which will impact an employer's ability to keep a quality workforce and eventually to stay in business).	Alternative fuel and the new possibilities and equipment designs they imply. Demographics (the baby boomer generation has unprecedented accumulated wealth and leisure time). New technologies improve quality and productivity, and thus competitiveness.

In the Mining sector (21), the subsector (212) Mining (Except Oil and Gas) has regional interest due to significant mining activities in the northern part of the region. The 212 subsector employs 90% of the 1,958 mining workers in the region. The coal industry is developing mines in the area and anticipates adding 2,000 jobs in the next 3 to 5 years.

The Utilities industry (22) is not subdivided, but there is a Utilities (221) subsector, Utilities. The Utilities subsector employs 2,726 workers in Region 11. While Utilities is a small subsector, many of the job skills overlap with the targeted manufacturing occupations. Additionally, the utilities industry is facing future shortages due to an aging workforce.

Sensitivities that impact mining and utilities include:

Negative Sensitivities	Positive Sensitivities
Environmental regulations (mining) Aging workforce Energy conservation policies Competition	More efficient and automated production methods (mining)

The Health Care and Social Services Sector is divided into four subsectors as shown below. The subsectors were also considered on the basis of size, establishments, growth, wages, and inter-relationships.

Health Care and Social Services Sector Jobs and Average Annual Wages per Job by Subsector, 2004

NAICS Subsector	Industry	Jobs		Average Wage Per Job	
		2004	Change 2000 to 2004	2004	Change 2000 to 2004
621	Ambulatory Health Care Services	8,153	15.2%	\$44,765	8.8%
622	Hospitals	10,633	5.0%	\$34,641	18.1%
623	Nursing and Residential Care Facilities	4,809	-5.3%	\$23,606	16.9%
624	Social Assistance	2,706	15.9%	\$17,532	6.3%

Data sources: Indiana Business Research Center based on ES202 data, U.S. Bureau of Labor Statistics
 Provided by: Indiana Business Research Center, IU Kelley School of Business

Ambulatory Health Care Services and Hospitals were selected by the SSI Implementation Team. These subsectors meet the criteria of high average annual wages and positive growth. The other two subsectors did not have average annual wages above the regional average and their staffing needs are quite different. Ambulatory Health Care Services and Hospitals also have sensitivities:

Negative Sensitivities	Positive Sensitivities
<p>Economics: when the economy is good, more nurses and other workers are able to reduce their hours or quit altogether and rely on spouse income.</p> <p>Growth in other industries: young people, particularly women, tend to gravitate toward the variety of opportunities in other fields when other sectors are growing.</p> <p>Increased regulations on the industry.</p> <p>Medicare/Medicaid reimbursement rates.</p> <p>Health care is the only industry in which competition doesn't result in reduced costs. Instead, innovations and expansion of services drive up the overall costs of the system.¹</p>	<p>Demographics: baby boomers are getting older, need more medical services.</p> <p>Technology: new technologies increase the need for specialty technicians.</p>

3. Subsector Validation

The Lead Team reviewed the subsector data and confirmed the SSI Implementation Team's analysis and selection of subsectors for both manufacturing and health care.

¹ Waukesha County Economic Development Corporation, May 2002

4. Selection of Occupations

The Regional SSI Consortium had brainstormed shortage occupations at their very first meeting; some derived their expertise from their own positions in the target industries, while others from their positions in the community (such as what economic developers, educators, and workforce intermediaries hear from employers). This preliminary list was used as a starting point, and compared against secondary research (information obtained from national level reports on manufacturing and health care skill shortages, newspaper and magazine and internet research).

The SSI Implementation Team then conducted primary data gathering, which consisted of telephone interviews with Region 11 businesses members, regional economic development experts and Academic institutions as well as discussion with focus group participants:

- ◆ A contact list of regional businesses was developed using InfoUSA website linked to DWD SSI Website. Contact information for companies from each of the selected subsectors was collected from website database as well as personal knowledge and contacts of the Implementation Team.
- ◆ A list of approximately 175 possible contacts was generated. The Implementation Team conducted telephone interviews using interview questions. These questions were also faxed to several businesses in an attempt to research businesses that did not respond to the telephone interview process.
- ◆ The Implementation Team made contact with 120 of the targeted contacts and were able to obtain responses from 60 of those contacts.

Manufacturing, Mining, and Utilities

While all respondents indicated that the region was generally well suited for hourly production occupations, 68% reported that in the entry level unskilled or semi-skilled positions a significant proportion of the applicants lacked basic math, and problem solving skills as well as a good work ethic such as showing up to work. Several of those interviewed also indicated that drug screening reduced the number of applicants for these positions.

Respondents also indicated that Senior Administration or Technical positions, such as Engineers, Scientists, or Management specialists were at times difficult to attract, requiring increased monetary incentives. Unlike the hourly positions, which were usually filled locally, these positions were filled through Midwestern or National searches. However the consensus among the interviewed Human Resource Managers/Directors was that there would likely always be a significant pool of job applicants with Baccalaureate degrees that desired to relocate back to Southwestern Indiana, therefore finding qualified people for these positions was not a significant concern.

The skill set/occupation that seemed to be in most demand was that of the **Industrial Maintenance and Industrial Trades such as Electrician, Pipe fitter, Hydraulics, and Mechanical in the maintenance field**. Fifty-four percent (54%) of those interviewed indicated that Maintenance and Technical positions were difficult to fill. This finding was further supported by comments from Regional Post Secondary Education Institutions such as Vincennes University and IVY Tech Community College. Both have experienced an increased demand for training services as well as an increase in grant funding opportunities to develop training program in the region as well as across the State.

Larger organizations such as Cinergy or Toyota typically had the least difficulty filling these positions because they could offer higher wages and job security. At times, unionization limited an organizations' ability to attract qualified applicants because of wage considerations across all trades at that organization.

Findings from telephone interviews also indicated that these Industrial Maintenance-Technician/Industrial Trade skill sets easily transfer across the industrial sector. For example an Industrial Electrician with experience in manufacturing or power generation would be able to move to the other sector if a more desirable position was available. In fact, that was the norm in the region in the late 1990's as Toyota ramped up hiring to meet production and maintenance staffing requirements for its facility in Gibson County. Toyota's higher wages attracted applicants from across the Midwest from all industry sectors². The effect of hiring experienced workers away from their existing positions had a "domino effect" down the "food chain" of organizations. The organizations with the more desirable positions due to high wages, benefits, job security or advancement potential are able to attract the more experienced workers from their existing positions causing those organizations to hire workers away from organizations that were not able to meet the higher wages or better benefits being offered. The increased wage and benefit pressure forced smaller organizations as well as those in more price sensitive markets to settle for less experienced workers and higher turnover. Several of those interviewed were concerned about an increasing number of applicants with a history of "job-hopping."

Impact of Shortages

The lack of locally available qualified applicants in these Industrial Maintenance Industrial Technician positions will limit future development of the Transportation Equipment Manufacturing cluster that has been developing in the region since the mid 1990's. Toyota remains at the center of this cluster and the region continues to attract suppliers of Toyota production such as ATTC Manufacturing Inc. in Perry County. Region 11 has a geographic advantage in attracting new enterprises that

²Wall Street Journal, April 19, 1999

support the Transportation Manufacturing Cluster; however, if the trend of fewer people qualified in the field of Industrial Maintenance continues the region will find it increasingly difficult to attract these suppliers which will limit future expansion and economic growth of the region.

“Skill shortages are having a widespread impact on manufacturers’ abilities to achieve production levels, increase productivity, and meet customer demands...This human capital performance gap threatens our nation’s ability to compete in today’s fast-moving and increasingly demanding global economy. It is emerging as our nation’s most critical business issue.”

2005 Skills Gap Report, The Manufacturing Institute

The primary occupations in the generally identified Industrial Maintenance field were:

- 49-9041 Industrial Machine Maintenance
- 49-9042 Maintenance and Repair Workers, General
- 49-9043 Maintenance Workers, Machinery

It should be noted that there are related occupations with somewhat interrelated and interchangeable skill sets. A few are listed below:

- 47-1111 Electricians (primarily Industrial)
- 17-3023 Electrical and Electronic Engineering Technicians
- 17-3026 Industrial Engineering Technicians
- 17-3027 Mechanical Engineering Technicians

Educational Data

Interviews with regional businesses and training institutions provided an estimate of the number of people in training programs targeted toward these positions. Quantifying the estimated demand for these occupations was complicated by the fact that, as mentioned previously, there are several maintenance-type positions across the Manufacturing, Mining and Utilities sectors. In addition, there are also many maintenance positions that are not related to the sectors of interest. For example, Hospitals and Universities have maintenance employees, however few if any are experienced in Manufacturing-type maintenance and yet they would be counted if occupations weren’t screened by sector. As we will see later, this is not the case for the health care fields. Therefore to develop the demand estimates the following assumption were made with regard to sector growth. The demand for

skilled people consists of replacing workers that leave as well as hiring as a result of sector growth. The Manufacturing sector has experienced growth, but it has not been uniform across all subsectors. Therefore the growth rates of selected Manufacturing subsectors were averaged together to estimate the growth of the pool of jobs for the primary occupations for the period from 2000 to 2004.

This growth rate was heavily influenced by the historical performance of the Transportation Equipment Manufacturing Subsector which had an 84% percent increase in jobs from 2000 to 2004. The selected subsectors averaged annual job growth of 7% during the same period. For this report, medium performance was estimated to be 3% with an additional 1% for replacements of existing workers. The low estimate was 2% below, and the high estimate was 2% above, the medium expected performance. These projections used Bureau of Labor employment estimate and projection data from DWD SSI website with a base year of 2002.

Selected Occupation Employment Totals, 2002

	Manufacturing	Mining	Utilities
Industrial Machine Mechanics (49-9041)	380	0	0
Maintenance and Repair Workers (49-9042)	1,860	90	130
Maintenance Workers, Machinery (49-9043)	30	20	60

Bureau Labor Statistics; Indiana Department of Workforce Development

The supply of new workers in each occupation was estimated based upon interviews with Vincennes University, IVY Tech Community College, Oakland City University and Evansville Vanderburgh School Corporation Career and Technology Center staff. The allocation of new workers was based upon the current size of each occupation and interview responses. Keep in mind that these occupations have very similar skill sets and workers can freely move between these occupations as desired. The table below shows the new worker allocations by source.

Estimated Average Annual Output of New Workers for Selected Occupational Codes by Source, 2005.

	Total	49-9041 (20%)	49-9042 (75%)	49-9043 (5%)
Vincennes University	35	7	26	2
IVY Tech	30	5	23	2
High Schools	3	2	0	1

Occupational worksheets for projected occupation shortages are contained in the appendices.

Health Care

There were 13 interviews conducted in the hospital and ambulatory care subsectors, five with hospital staff and eight with staff from ambulatory care facilities each. In addition, three interviews were conducted with faculty in health care departments of regional post-secondary institutions. In the hospital subsector, pharmacists, occupational therapists, physical therapists, respiratory therapists, nurses, and medical imaging technicians were all mentioned as difficult to fill positions. However, the professional degrees required for pharmacists, occupational therapists, and physical therapists make them inappropriate for the workforce development system. There are several other mitigating factors for shortages in these occupations, none of which are conducive to resolution by the Regional Consortium. Medical imaging technicians and respiratory therapists were also mentioned as in-demand occupations. However, they are not in as short supply as Pharmacists and Therapists. There are four institutions in EGR 11 that offer training in medical imaging: University of Evansville (UE), University of Southern Indiana (USI), Vincennes University (VU) and IVY Tech Community College. As a result of the local supply of medical imaging technicians, the consensus among those interviewed was that people for these positions were not in short supply, but that the hiring difficulties arose from the cycle of availability based upon the school year. The same issue was given for respiratory therapists: there is a shortage, but it is cyclical and related to the school year cycle.

The availability of nurses was a concern to those in the hospital setting more than those in ambulatory care. All five interviewed from hospitals indicated that the shift nature of hospital work was less attractive to the current generation of nursing applicants than the 8 to 5 schedule of a clinic or physician's office. The region's hospitals have an increasing demand for registered nurses (RN). The increased stress on these nurses from staffing shortages and more seriously ill patients increases burnout and turnover among the nursing staff. In addition, the nursing workforce is aging and is expected to experience a significant number of retirements as the baby boomer generation begins retiring in the next few years. The physical demands on nurses for lifting patients and long hours standing/walking/bending cause nurses to retire from hospital work somewhat earlier than workers in more sedentary occupations.

Impact of Shortages

The shortage of RNs in the hospitals has an effect on the quality of care that a hospital is able to provide. Without adequate staffing levels there is an increased risk of error by the nurses as they cover a greater number of patients and work longer hours. Therefore, it is vital to the quality of health care in the region to train, recruit, and retain quality nursing professionals. The quality of health care has a

secondary impact: if affects the quality of life, which in turn affects recruitment into the region and thus economic development.

"A study on the nursing shortage by Linda Aiken of the University of Pennsylvania School of Nursing found that an estimated 20,000 people die each year because they have checked into a hospital with overworked nurses. The study also found that Americans scheduled for routine surgeries run a 31% greater risk of dying if they are admitted to a hospital with a severe shortage of nurses."

Nursing Facts, March, 2005

Educational Data

Currently there are two and four year programs available, however the employment market provides very little compensation differential between the two. It was also mentioned that there is a trend toward the Baccalaureate level of training for the Hospital Nursing staff. In EGR 11, one of the Nursing Programs, USI, has closed its two-year RN program with the last class graduating in 2007. After 2007, USI and UE will have only Baccalaureate Nursing programs. That will leave Vincennes University and Ivy Tech with two-year RN programs. The table below shows the region's estimated annual RN graduation totals.

Selected Occupation Employment Totals, 2002 data

	Hospitals	Ambulatory care	Nursing Homes
Registered Nurse (29-1111)	2,400	1,110	340
Licensed Practical Nurse (29-2061)	510	460	610

Bureau Labor Statistics; Indiana Department of Workforce Development

Annual graduation totals for EGR 11 Nursing Programs, 2005

	RN	LPN
University Southern Indiana	50(B.S.)/50(Assoc.)*	0
University of Evansville	20	0
Vincennes University	80	45
IVY Tech Community College	50	30

* USI Associated Degree RN program ends with Class of 2007

Licensed practical nurses (LPN) are also a significant component of the region's nursing staff. These nurses typically work in long-term care facilities, physician offices or medical clinics. While these facilities require a nursing staff, those interviewed indicated that RNs were usually over-qualified for these roles. In EGR

11, there are two LPN programs: Vincennes University and IVY Tech Community College. These programs respectively graduate approximately 45 and 30 LPNs annually as shown in the table above. LPNs also provide an important role as an intermediate point for transition into nursing careers. People interested in nursing are able complete an LPN program in one to two years. Once an LPN, they are able continue their training to become an RN at either the Associates level or Bachelors level. LPNs, along with RNs are an integral component of the region's health care system and essential for the development of a quality health care system.

While there were several occupations for which it is difficult for organizations in the hospital and ambulatory care subsectors to recruit in EGR 11, the nursing fields offer the greatest potential for return in workforce development efforts as there are over 4000 RN positions in the region and 1650 LPN positions.

The primary occupations in the Health Care field therefore are:

29-1111 Registered Nurse

29-2061 License Practical Nurse

Occupational worksheets for projected occupation shortages are contained in the appendices.

5. Occupational Validation

The SSI Consortium Lead Team reviewed the occupational data and confirmed the SSI Implementation Team's analysis and selection of occupations for manufacturing, mining, utilities and health care.

Selection and Definition of Key Industries and/Or Clusters

Definitions and Profiles³

Furniture and Related Products

Industries in the Furniture and Related Product Manufacturing subsector make furniture and related articles, such as mattresses, window blinds, cabinets, and fixtures. The processes used in the manufacture of furniture include the cutting, bending, molding, laminating, and assembly of such materials as wood, metal, glass, plastics, and rattan. Design and fashion trends play an important part in the production of furniture. The integrated design of the article for both esthetic and functional qualities is also a major part of the process of manufacturing furniture. Design services may be performed by the furniture establishment's work force or may be purchased from industrial designers.

Some of the processes used in furniture manufacturing are similar to processes that are used in other segments of manufacturing. For example, cutting and assembly occurs in the production of wood trusses that are classified in Wood Product Manufacturing. Metal furniture manufacturing uses techniques that are also employed in the manufacturing of roll-formed products classified in Fabricated Metal Product Manufacturing. The molding process for plastics furniture is similar to the molding of other plastics products.

About average⁴ growth in the number of jobs is expected through 2012. The outlook depends on changes in population, employment levels, incomes, automation, export markets, and business investments. It also depends on construction and real estate activity, which can slow down when interest rates rise. Automation is a factor because companies may invest in new equipment to raise productivity and cut labor costs.

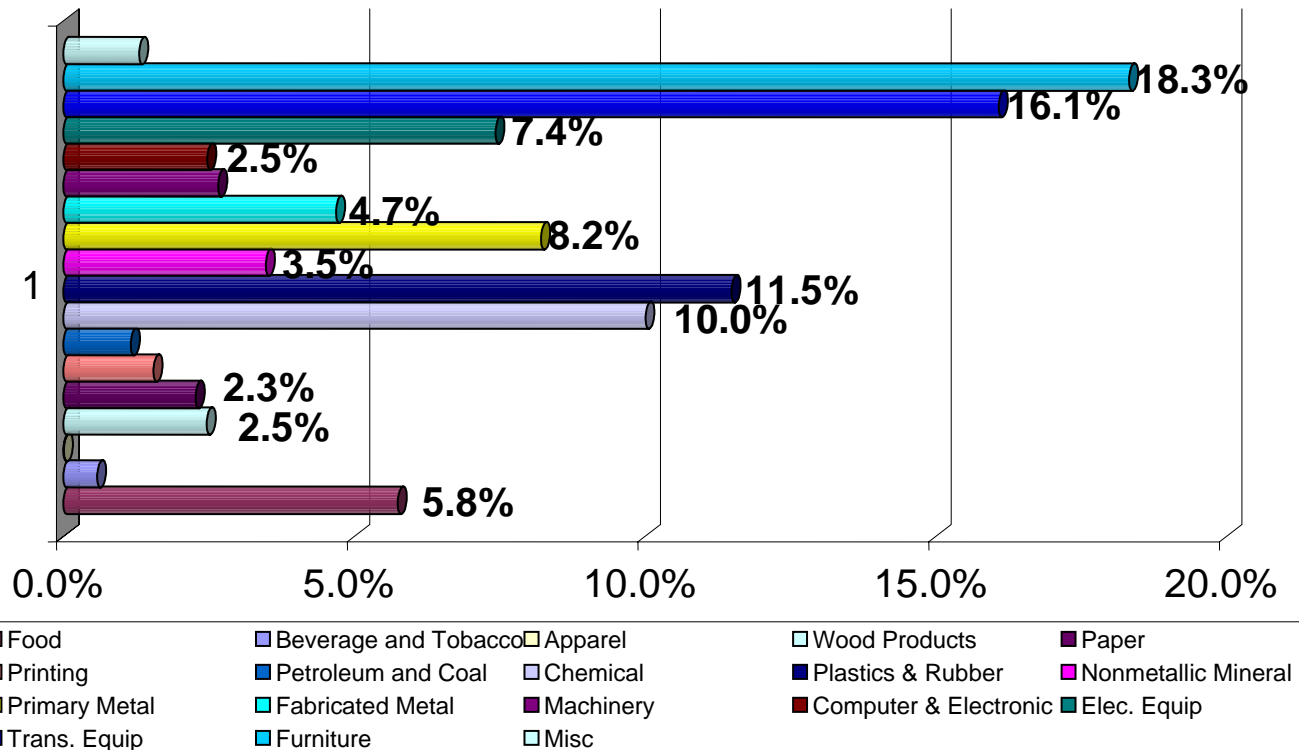
Another factor is the cost of meeting clean air requirements. Cabinet and furniture plants must monitor the volatile organic compounds they use. To meet indoor clean air standards, firms need better equipment and more employee training. These costs influence some firms to consolidate or close, resulting in lost jobs.

Furniture and related product manufacturing in EGR 11 employs 8,187 workers, comprising 18.3% of all manufacturing employment.

³³ Subsector definitions are taken from the NAICS website at <http://www.census.gov/epcd/www/naics.html>. National projections and sensitivities for subsectors are from <http://www.iseek.org/sv/index.jsp>

⁴ "Average" means in comparison with the growth of *all* industries.

Distribution of Employment in EGR 11 Manufacturing Subsectors



The 102 establishments in Furniture and Related Products manufacturing range in size from 1-4 employees up to 1,000 – 4,999 employees (Best Chairs, Inc, in Ferdinand). Three firms (Jofco Intl, Kimball Electronics, and Kimball International, all in Jasper) are in the 500-999 range. Seven are in the 250-499 range, thirteen are of the 100-249 size, eight are 50-99, and the rest are smaller than 50.

Average annual wages in Furniture and Related Products are the lowest of any of the targeted subsectors at \$34,171 per job. However, the size of this subsector means it returns total wages to the economy of \$279,757,977 per year.

Maps showing the geographic locations of the firms in this subsector can be found at <http://www.stats.indiana.edu/ssi/page2.asp> along with a list of specific employer names, six-digit NAICS industry, address, and annual sales. A click on each firm's name provides a more detailed street map and contact person's name and phone number.

Transportation Equipment

The Transportation Equipment subsector comprises establishments primarily engaged in manufacturing equipment for transporting people and goods.

Establishments in this subsector utilize production processes similar to those of other machinery manufacturing establishments - bending, forming, welding, machining, and assembling metal or plastic parts into components and finished products. However, the assembly of components and subassemblies and their further assembly into finished vehicles tend to be a more common production process in this subsector than in the Machinery Manufacturing subsector.

Most people work as assemblers or machine tool operators. Most have a high school diploma and receive training on the job. It may take several years to reach the highest level of skill in some jobs. Production workers can advance to jobs as quality control inspectors, skilled craftworkers, or supervisors. Working conditions in the industry have improved in recent years. However, many production workers are still be subjected to noise, heat, fumes, and repetitive work. They may come into contact with chemicals, oil, and grease. They often lift heavy objects. Employees may also work near dangerous machinery. Workers may wear protective devices and clothing. Nationally, most jobs are near supplies of iron and steel.

Outlook

Nationally, the number of jobs in this industry is expected to decline. The transportation equipment industry has ups and downs. Consumers tend to buy in prosperous times and not buy during recessions. During recessions, companies lay workers off.

Competition and automation are the main reasons for job losses. Partly because of the high rate of injuries on the job, companies use robots whenever possible. Robots, computers, and programmable equipment reduce the need for manual labor. Other factors include overseas competition, improved products, and safety and environmental regulations.

Positive factors in growth are trade with Latin America, baby boomer spending, improved consumer confidence in American-made products, and the need to replace aging cars and airplanes. Another positive factor is rapid growth in electronic commerce, expanding shipping delivery services.

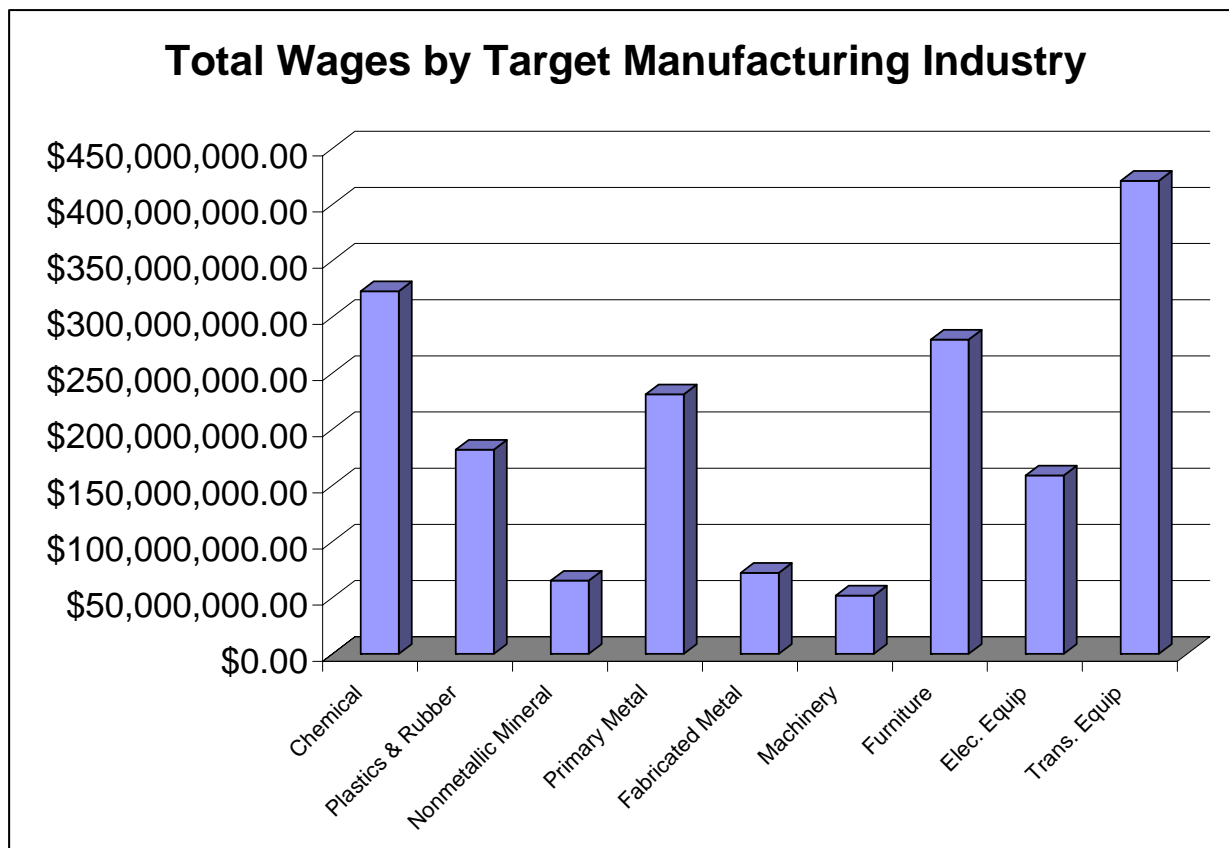
Firms in EGR 11

There are 26 firms in Region 11, ranging from 1-4 employees to 1000-4999 workers. Only one firm fits the last category, Toyota Motor Manufacturing in Princeton. All the others are quite small. There is one engaged in aircraft manufacturing (Bombardier Aerospace in Newburgh, with only 5-9 employees); one in ship building (Corn Island Shipyard in Grandview); one in railroad equipment (General Signal in Evansville), and

one in motorcycles (Backwoods Motor Sports in Tennyson). The remainder are automobile parts manufacturers and suppliers.

Employment and Wages in EGR 11

Employment in this subsector grew by 84.8% from 2000 to 2004. Average annual wages are very high at \$58,624. With 7,186 workers, Transportation Equipment returns total wages to the Region 11 economy of \$421,272,064, the largest of any of the targeted manufacturing subsectors.



Plastics and Rubber Products

Industries in the Plastics and Rubber Products Manufacturing subsector make goods by processing plastics materials and raw rubber. The core technology employed by establishments in this subsector is that of plastics or rubber product production. Technology includes molding, forming, spin casting, or extruding of various products. Plastics and rubber are combined in the same subsector because plastics are increasingly being used as a substitute for rubber; however the subsector is generally restricted to the production of products made of just one material, either solely plastics or rubber. As materials technology progresses, plastics are increasingly being used as a

substitute for rubber; and eventually, the distinction may disappear as a basis for establishment classification.

Plastic manufacturers primarily mold plastics for other manufacturing industries that use plastic products to make their goods. Demand from these industries will influence job growth in the plastics industry.

Outlook

Nationally, employment in the rubber and plastic products industry is expected to grow about as fast as the average overall employment growth rate through 2012. Most job growth will be in plastic product manufacturing, which is anticipated to add 128,000 new jobs nationally from 2002 to 2012.

The outlook for the rubber and plastic products industry also depends on consumer demand, automation, and environmental standards. Markets are improving for biodegradable plastics. Researchers also work to find ways of using scrap rubber and plastic for fuel.

Because plastic composites are replacing metal components in many products, producers must update fabrication plants. When manufacturers need to spend money for new equipment, they often automate more jobs. This trend will moderate job growth for hand workers and assemblers. More openings will occur for machine tool operators and setters.

Firms in EGR 11

There are 44 Plastics and Rubber Products manufacturing firms in the region, ranging in size from 1-4 to 1000 – 4,999. GE Co in Mount Vernon is the largest employer in the subsector. Only two firms, Berry Plastics Corp and Guardian Automotive, both in Evansville, are in the 500-999 range. Three firms, two in Evansville and one in Dale are in the 250-499 category; there are five firms (four of which are in Evansville) in the 100-249 range; six that are 50-99; and the rest are all smaller firms.

Employment and Wages in EGR 11

Plastics and Rubber employs 5,133 workers in EGR 11 at an annual average wage of \$35,416, thereby returning total wages of \$181,790,328. The industry grew in employment by 4% between 2000 and 2004.

Chemical Manufacturing

The Chemical Manufacturing sector is based on the transformation of organic and inorganic raw materials by a chemical process and the formulation of products.

Chemical and drug companies produce many different kinds of chemicals and drugs for personal or industrial use. For other industries, they make organic chemicals, synthetic fibers, dyes and pigments, and industrial gases. They make agricultural chemicals, pesticides, paints, coatings, and adhesives. For personal use, they make drugs and medicines, cosmetics, and soaps.

Chemical manufacturing plants usually operate continuously. Therefore, workers may work split, weekend, and night shifts. Product safety and quality control are major concerns. Clean work areas are important in most chemical products plants to maintain purity in products. Most jobs require little physical effort.

Chemical firms usually locate in areas where other manufacturing businesses are located, such as near the automotive and electronic industries.

Outlook

Nationally, a decline in the number of jobs is expected for the industry as a whole, although employment in drug manufacturing is expected to grow faster than average. Factors that will reduce the need for workers include increasing automation, foreign competition, and company mergers. Growing concerns about chemicals and the environment will require companies to invest more in the research and development of safer products and by-products.

Firms in EGR 11

There are 44 Chemical Manufacturing firms in Region 11, ranging in size from 1-4 to 1000-4,999. Only Bristol-Myers Squibb in Evansville is in the largest category. One firm, Jasper Rubber Products in Jasper, is in the 500-999 range. Four firms, all in Evansville, are in the 100-249 range; another four, clustered around Evansville, are in the 50-99 employee size, and the remainder are all smaller than that.

Employment and Wages in EGR 11

Chemical manufacturing jobs in Region 11 are the highest paid of any other manufacturing subsector, with average annual wages of \$72,209. The 4,472 workers collectively receive total wages of \$322,918,648.

Primary Metal Manufacturing

Industries in the Primary Metal Manufacturing subsector smelt and/or refine ferrous and nonferrous metals from ore, pig or scrap, using electrometallurgical and other process metallurgical techniques. Establishments in this subsector also manufacture metal alloys and superalloys by introducing other chemical elements to pure metals. The output of smelting and refining, usually in ingot form, is used in rolling, drawing, and extruding operations to make sheet, strip, bar, rod, or wire, and in molten form to make castings and other basic metal products.

Primary manufacturing of ferrous and nonferrous metals begins with ore or concentrate as the primary input. Establishments manufacturing primary metals from ore and/or concentrate remain classified in the primary smelting, primary refining, or iron and steel mill industries regardless of the form of their output. Establishments primarily engaged in secondary smelting and/or secondary refining recover ferrous and nonferrous metals from scrap and/or dross. The output of the secondary smelting and/or secondary refining industries is limited to shapes, such as ingot or billet, that will be further processed. Recovery of metals from scrap often occurs in establishments that are primarily engaged in activities, such as rolling, drawing, extruding, or similar processes.

New production employees usually begin as laborers and helpers. They receive most of their training on the job. However, employers increasingly prefer to hire high school graduates as machinery becomes more complex. As workers gain experience, they may specialize in a particular job and progress to more skilled operations such as melting, pouring, and casting, or metal rolling.

Working in primary metals can be hot, dirty, and dangerous. Production workers usually wear hard hats, safety shoes, eye and ear protection, and other protective clothing. However, modern equipment may allow workers to monitor operations from air-conditioned control rooms. Most mills operate around the clock, making night and weekend work common. Overtime work is common during peak production periods.

More than half of the people in primary metals work in production occupations. They include foundry workers, metal refining workers, and machine tool operators. Many millwrights and industrial machinery mechanics work in this industry. Employers prefer to locate near sources of ore or scrap metals, where energy is cheap, and transportation and shipping are available.

Outlook

Nationally, a decline in the number of jobs is projected. About average growth is expected for jobs in foundries. Mills are closing or consolidating in response to overproduction worldwide and foreign competition. The industry is becoming more productive, due to automated production methods, computerization, and changes in business practices. The result is that fewer workers will be needed.

Firms in EGR 11

There are only 9 establishments in EGR 11, ranging in size from 10-19 to 1000-4,999 in size. Only Alcoa Warrick Operations in Newburgh fits the latter category. Waupaca Foundry, Inc. in Tell City is the only firm of the 500-999 size. Two companies, Indiana Tube Corp in Evansville and BWX Technology in Mount Vernon fall into the 100-249 size group. One firm in Evansville is 50-99, and the remainder are smaller.

Employment and Wages in EGR 11

In EGR 11, Primary Metal Manufacturing experienced a -10.2% decline in employment from 200-2004. But with its importance to the transportation cluster, average annual wages of \$62,972, and 3,670 workers earning a combined \$231,107,240 annually, this is a key industry to the region's economy.

Electrical Equipment, Appliance, and Component Manufacturing

Industries in the Electrical Equipment, Appliance, and Component Manufacturing subsector manufacture products that generate, distribute and use electrical power.

Electric Lighting Equipment Manufacturing establishments produce electric lamp bulbs, lighting fixtures, and parts. Household Appliance Manufacturing establishments make both small and major electrical appliances and parts. Electrical Equipment Manufacturing establishments make goods, such as electric motors, generators, transformers, and switchgear apparatus. Other Electrical Equipment and Component Manufacturing establishments make devices for storing electrical power (e.g., batteries), for transmitting electricity (e.g., insulated wire), and wiring devices (e.g., electrical outlets, fuse boxes, and light switches).

Most workers in this industry are engineers, technicians, and assemblers. Some assemblers are highly skilled. When filling technician jobs, employers prefer graduates of two-year programs offered by colleges or technical schools. Engineers must have a bachelor's degree in engineering.

Outlook

Nationally, the number of jobs in this industry is expected to decline through 2012. Employment will be slowed because production methods in this industry have become increasingly automated. This increases productivity and requires fewer workers. Also, more of the labor-intensive production and assembly work is being done outside of the United States. In EGR 11, employment declined by -9.8% from 2000- 2004.

Firms in EGR 11

There are 15 firms in Region 11. Most are small, but Whirlpool Corp in Evansville is one of the largest employers in the region, with an employment range of 1000-4999. The next largest, Hansen Corp in Princeton, is only in the 250-499 range. Hurst Manufacturing, also in Princeton, occupies the only 100-249 slot, and one other, General Electric in Tell City (gone!), is the only firm in the 50-99 size. The remainder are smaller.

Employment and Wages in EGR 11

Wages are high at \$47,847 annual average per job, and the 3,320 workers in this subsector collectively earn \$158,852,040 per year.

Fabricated Metal Manufacturing

Industries in the Fabricated Metal Product Manufacturing subsector transform metal into intermediate or end products, other than machinery, computers and electronics, and metal furniture or treating metals and metal formed products fabricated elsewhere. Important fabricated metal processes are forging, stamping, bending, forming, and machining, used to shape individual pieces of metal, and other processes, such as welding and assembling, used to join separate parts together. Establishments in this subsector may use one of these processes or a combination of these processes.

The manufacturing performed in the Fabricated Metal Product Manufacturing subsector begins with manufactured metal shapes. The establishments in this sector further fabricate the purchased metal shapes into a product.

Products from this industry are used in other industries like construction, transportation equipment, industrial machinery, electronics, and utilities. The outlook is affected by the level of business activity in the other industries. It also depends on competition from imports, defense spending, and international markets.

Employers may hire new production workers who have graduated from high school and taken math, blueprint reading, and metal shop. New employees may begin as helpers and learn to operate machine tools such as drill presses, engine lathes, or milling machines. The work can be repetitive. Inexperienced workers may also begin as assemblers and learn to perform simple tasks on assembly lines.

Many employers hire through apprenticeship programs. The apprenticeships take four or five years and include classroom instruction and shop training. Most new apprentices apply after high school. Apprentices may begin training in machining, tool and die making, welding, or other skilled crafts. After completing their programs, apprentices can work as skilled crafts workers.

Graduates of technical or engineering schools may qualify for jobs in designing new products, quality control, or production engineering. Technicians and engineers may advance to working as supervisors or managers.

Production workers may stand for long periods operating machines. They may sit at benches or conveyors doing repetitive assembly tasks. Work areas may be noisy. Workers often wear ear and eye protection and other protective clothing.

Products from this industry are used in other industries like construction, transportation equipment, industrial machinery, electronics, and utilities. The outlook is affected by the level of business activity in the other industries. It also depends on competition from imports, defense spending, and international markets. Automation is a factor in job growth for some routine or repetitive tasks. Many other tasks do not lend themselves to automation.

Outlook

Nationally, employment in fabricated metal products is expected to grow more slowly than average through 2012. In EGR 11, the subsector declined -25.1% in employment in the last few years.

Firms in EGR 11

Despite the smaller size of the industry overall, there is a very large number of firms in the region. Of the 111 establishments, none have more than 500 employees. The three largest firms are in the 250-499 size: Flexcel Inc in Jasper, Silgan Closures in Evansville, and Superior Essex in Vincennes. Four are in the 100-249 range: American Window and Glass, Flanders Electric, and Global Wire Technologies, all in Evansville, and North American Products Corp in Jasper. There are seven in 50-99 range, and the very large remainder of firms are smaller than that.

Employment and Wages in EGR 11

The average annual wages are the second lowest of the target subsectors, at \$34,453, and the 2,095 workers collectively earn \$72,179,075. Again, this subsector was selected because of its inter-relationship with the transportation sector and common skill sets.

Nonmetallic Mineral Products

The Nonmetallic Mineral Product Manufacturing subsector transforms mined or quarried nonmetallic minerals, such as sand, gravel, stone, clay, and refractory materials, into products for intermediate or final consumption. Processes used include grinding, mixing, cutting, shaping, and honing. Heat often is used in the

process and chemicals are frequently mixed to change the composition, purity, and chemical properties for the intended product. For example, glass is produced by heating silica sand to the melting point (sometimes combined with cullet or recycled glass) and then drawn, floated, or blow molded to the desired shape or thickness. Refractory materials are heated and then formed into bricks or other shapes for use in industrial applications. The Nonmetallic Mineral Product Manufacturing subsector includes establishments that manufacture products, such as bricks, refractories, ceramic products, and glass and glass products, such as plate glass and containers. Also included are cement and concrete products, lime, gypsum and other nonmetallic mineral products including abrasive products, ceramic plumbing fixtures, statuary, cut stone products, and mineral wool. The products are used in a wide range of activities from construction and heavy and light manufacturing to articles for personal use.

Many production workers in the industry operate machines that crush, grind, sort, and mix raw materials. Others operate machines that mold and form materials into specified shapes. Other workers may operate kilns or ovens that dry, cure, and glaze products. Because products are heavy or produced in large batches, many workers operate lifting and moving machines and conveyors.

New production employees begin as helpers and laborers. They move materials by hand or work as machine feeders and offbearers under the direction of more experienced workers. When they have experience and understand the production process, they may operate production machinery or heavy material moving equipment. Production workers may advance to jobs in quality control or to more skilled jobs such as machine tool operators.

Production work in this industry can be strenuous. Workers endure dust, heat, and noise. There are hazards from machines, chemicals, and hot materials. Workers often wear ear and eye protection, steel toe boots, and hard hats.

Many of the jobs are in production occupations. Some are in distribution occupations such as long haul truck driving and heavy equipment operation.

Employment in this industry is affected by demand from construction activity and other manufacturing industries. The construction industry uses concrete products in public works projects, commercial buildings, and housing. Rising imports and productivity will reduce the need for workers.

Outlook

Nationally, the number of jobs in the stone, clay, and glass products industry is expected to grow about as fast as average through 2012. In EGR 11, employment declined by only a minimal -.1% from 2000-2004.

Firms in EGR 11

There are 27 firms in the region, all of them smaller than 500 workers. The largest two firms are Gemtron in Vincennes and PPG in Evansville, both in the 250-499 category. The third largest is Can-Clay Corp in Cannelton in the 100-249 size range. Three firms, all in Evansville, are in the 50-99 range and the remaining firms are smaller.

Employment and Wages in EGR 11

The 1,556 jobs in this industry averaging \$41,892 per year earn \$65,183,952 in the aggregate.

Machinery Manufacturing

Firms in machinery manufacturing design and make products such as gears and levers that apply mechanical force to perform work. They forge, stamp, bend, form, and machine pieces of metal. They weld and assemble to join parts to make products. These processes are similar to metal fabrication. But when making machinery, firms use multiple metal-forming processes to make diverse parts of a machine. Complex assembly operations are required. Firms specialize in making machinery for particular uses. In machinery production, design is considered part of the production process.

Employers prefer high school graduates who have taken courses in math, blueprint reading, and shop practices. New employees may begin as production assemblers and learn simple, repetitive tasks on the job. New workers may also begin as helpers and receive training to operate drill presses, engine lathes, or milling machines.

Many firms hire through apprenticeship programs that take four or five years. Apprentices receive classroom instruction and shop training for skilled jobs such as machinists, tool and die makers, and welders. After completing their programs, apprentices become journey workers. With experience, they may advance to jobs as shop supervisors or managers.

Technical or engineering school graduates may qualify for jobs in designing new products, quality control, or production engineering. Technicians and engineers may advance to design or production supervisory jobs or other management positions.

Production workers may stand for long periods operating machines. They may sit at benches or conveyors doing repetitive assembly tasks. Work areas may be noisy. Workers often wear ear and eye protection and other protective clothing.

Outlook

Nationally, slower than average growth in employment is expected. In EGR 11, employment fell by a precipitous -31.1% from 2000-2004. The outlook depends on international trade and stable financial markets. It also depends on the needs of other industries. Most companies in this industry sell machinery and equipment to other manufacturers. They must use new technologies to keep up with the needs of customers. The electronics industry is a major buyer of industrial machinery and equipment.

Firms in EGR 11

This is another subsector dominated by small employers. There are 82 firms in Region 11, and none have more than 250 workers. The largest, with 100-249 workers, is Process Filtration Div. in Tell City. Five firms (3 in Evansville, one in Jasper, and one in Dale) are in the 50-99 range, and the rest are smaller.

Employment and Wages in EGR 11

The 1190 workers in this subsector earn an average annual wage of \$43,610, with collective total wages of \$51,895,900.

Mining (Except Oil and Gas)

Industries in the Mining (except Oil and Gas) subsector primarily engage in mining, mine site development, and beneficiating (i.e., preparing) metallic minerals and nonmetallic minerals, including coal. The term "mining" is used in the broad sense to include ore extraction, quarrying, and beneficiating (e.g., crushing, screening, washing, sizing, concentrating, and flotation), customarily done at the mine site.

People under 18 years old are not allowed to work in hazardous occupations in the mining and quarrying industry. Most jobs in this industry are outdoors at least part of the time. Mining can be dirty, dusty, noisy, and uncomfortable work and workers may work in all kinds of weather. The work demands physical stamina and careful attention to safety. Underground mining is more hazardous than surface mining because of the added danger of inadequate ventilation and cave-ins. Employment in the production of sand and gravel generally is above ground.

Outlook

The number of jobs in the mining industry is expected to decline nationally through 2012. In EGR 11, the industry added 418 workers between 2000-2004. More efficient and automated production methods require fewer workers. The effects of

environmental regulations, international competition, and industry consolidations will result in a reduction of workers. Sand, gravel, and other nonmetallic minerals markets depend on demand from the agriculture and construction industries.

Firms in EGR 11

There are 46 small mining (except oil and gas) firms in Region 11, none larger than 250 workers. Four firms are in the 100-249 range: Black Beauty Coal Co. in Francisco, Black Beauty Coal Co. in Oakland City, Phoenix Natural Resources in Jasper, and United Minerals, Inc in Huntingburg. Four others are in the 50-99 range, and the remainder are smaller.

Employment and Wages in EGR 11

In 2004, EGR 11 employed 1,958 workers in mining, at an average annual wage of \$57,128.

Utilities

Utility companies provide electric, gas, and sanitary services. They generate and distribute energy in the form of electricity, gas, and steam. Utilities provide domestic, commercial, and agricultural water systems. They provide sanitary systems to collect and treat or dispose of garbage, sewage, or other waste.

High school graduates qualify for most entry-level production jobs and some customer service jobs. They may advance by going through an apprenticeship program and gaining experience on the job. Most technicians have at least two years of formal education after high school. Computer systems analysts, managers, and engineers often need four-year degrees.

Electric utility companies install and maintain many miles of electric lines, transformers, and other equipment. Employees usually begin as helpers or ground workers, and receive several years of training on the job. They work on call and often work overtime during power outages caused by storms, floods, or fires. They may advance to more complex jobs and to supervising others. Natural gas companies also hire installers and maintenance workers, as well as office staff. Some may advance to supervisory or management jobs.

Some workers are exposed to electricity and gases that are hazardous and need careful handling. Because of company safety programs and training, illness and injury rates are below average in most of the industry.

Outlook

Nationally, the number of jobs in the industry overall is expected to decline. However, faster than average growth is expected for jobs in water, sewage, and other systems. In Region 11, the industry grew 1.3% from 2000-2004, adding 57 jobs.

The outlook for utilities depends on changes in energy policy, automation, competition, and conservation. Automation is a factor because when utility companies automate services such as meter reading and billing, people lose jobs.

Firms in EGR 11

There are 52 utility companies in the region. Vectren, at the 1000-4999 range, is the largest. There are two in the 250-499 size range: American Electric Power Co. in Rockport and Indianapolis Power and Light Co. in Petersburg. All the remaining employers have fewer than 50 employees.

Employment and Wages in EGR 11

In 2004, there were 2,726 workers in utilities in the region, earning an average annual wage of \$61,284.

Ambulatory Health Care

Industries in the Ambulatory Health Care Services subsector provide health care services directly or indirectly to ambulatory patients. Outpatient health care services organizations provide medical, surgical, and other special services. People generally use these services without staying overnight at the facility.

The industry includes offices of physicians, dentists, chiropractors, podiatrists, optometrists, acupuncturists, occupational and physical therapists, and dietitians. It includes a wide variety of health services such as medical and dental laboratories, blood banks, emergency care centers, home health care services, and pain therapy clinics.

Health care workers who provide direct patient care need to guard against back strain. Nursing assistants and home health aides who often move or lift patients or equipment may wear low back support to help prevent injury. Health care workers also need to guard against infectious diseases, radiation, and exposure to chemicals.

Outlook

Nationally, faster than average growth in employment is expected in offices of health care practitioners compared to growth rate of all employment. Much faster than average growth is expected in other ambulatory care services such as outpatient centers, home health care providers and medical laboratories.

A growing and aging population, increased public awareness, and the cost-effectiveness of care will spur growth. The demand for home healthcare services will grow. Also, the expansion of outpatient services in drug and alcohol treatment clinics, mental health clinics, and medical rehabilitation centers will create jobs.

Outpatient care costs less than hospital care. When hospitals merge to reduce costs, more clinics and health care jobs occur outside hospitals. The outlook also depends on public and private health insurance. Whether people can have services often depends on whether the insurance will help pay for treatments that doctors recommend.

Rising malpractice insurance costs are an issue for physicians' offices. Small groups are moving to larger group practices; however, small group practices tend to pay higher wages. An important trend is toward prevention. When people focus on protecting their health through nutrition and exercise, they need less emergency and surgical care.

Firms in EGR 11

There are 820 ambulatory health care employers in the region, mostly very small. Only the Welborn Clinic in Evansville is in the 500-999 range. Three are in the 250-499 category: Perry County Hospital in Tell City, St. Mary's Warrick in Boonville, and the Visiting Nurse Association in Evansville. Nine are in the 100-249 size, all in Evansville with the exception of one in Huntingburg. Six are in the 50-99 size, and the remainder are smaller.

Employment and Wages in EGR 11

In EGR 11, employment grew by 15.2% from 2000-2004, bringing employment up to 8,153 workers earning an average annual wage of \$44,765, and aggregate wage of \$364,969,045.

Hospitals

Employers in the hospital subsector provide medical, diagnostic, and treatment services that include physician, nursing, and other health services to inpatients and the specialized accommodation services required by inpatients. Hospitals may also provide outpatient services as a secondary activity. Establishments in the Hospitals subsector provide inpatient health services, many of which can only be provided using the specialized facilities and equipment that form a significant and integral part of the production process.

Outlook

About average growth in the number of jobs is expected in hospitals through 2012. Employment in EGR 11 increased by 5% from 2000 to 2004. Hospital average wages are lowered by the large number of low-skill/low-wage support staff needed to maintain such facilities, such as custodians, groundskeepers.

In hospitals, the trend is toward more outpatient treatment and shorter hospital stays. Patients are being shifted from hospitals into other facilities for rehabilitation. Because of Medicare and insurance reimbursement rates as well as inefficiencies of small scale, many rural hospitals cannot afford to remain in business despite the need. In addition, hospitals often consolidate to reduce costs. Even with these trends, hospitals will provide many jobs. Jobs will open to replace workers who change jobs or leave for other reasons.

The availability of quality medical care is a quality of life issue, and many retirees in our aging population will be looking for such services. But there are critical skill shortages across the nation, creating intense competition for the best employees. Registered nurses can basically choose any state, city, or town they want to live in and be assured of finding employment.

Firms in EGR 11

There are 55 establishments classified as hospitals in EGR 11. Three may be classified in the 1000-4999 size group: Deaconess in Evansville, Good Samaritan in Vincennes, and St. Mary's in Evansville (actually, the DWD website shows four, but St. Mary's Health System and St. Mary's Hospital, shown at the same address, are presumed to be one and the same). Three are in the 500-999 size: Evansville State Hospital in Evansville, Memorial Hospital in Jasper, and St. Mary's Riverside in Evansville. Five are in the 250-499 category, seven of the 100-249 size, six in the 50-99 size, and the rest are smaller.

Employment and Wages in EGR 11

The 10,633 workers earn an average of \$34,641 per year, with an aggregate total wage of \$368,337,753. The total wages are thus higher than the total wages of any manufacturing subsector with the exception of transportation equipment.

Reasons for Selecting Key Industries and Clusters

The rationale for selecting the key industries and subsectors was described in Section I on Methodology. To briefly repeat, the SSI Implementation Team gathered data on two-digit NAICS industries to present to the Lead Team on size of employment (opportunity), shift share analysis to reflect net job changes, growth in

employment and establishments, wages (average annual wage per job and aggregate), and location quotient (competitive advantage). Manufacturing and health care were selected because of their tremendous economic impact on the region and the many opportunities they provide for skilled workers at good wages. Mining was added to consideration because of its significance to the northern part of the region, its growth rate of 27.1%, extremely high average wages, and high location quotient (4.05 Indiana base, 3.7 Midwest, and 2.35 National base. Any number higher than 1 indicates the region has a competitive advantage for the industry). Additionally, the mining industry anticipates adding 2,000 workers in the next 3-5 years for mines that are being developed.

Utilities was included because of the 1.3% growth, very high wages, and high location quotient (2.59 Indiana base, 2.68 Midwest base, and 2.08 National base). Additionally, many of the job skills required in this sector overlap with those in manufacturing.

In addition to the raw data obtained from the DWD website and other databases, the Team referenced the Region 11 Economic Development Strategy report, which identified advanced manufacturing as a “star sector” for the region because the region’s share of specialized employment in the cluster is above the national average, and it grew in Region 11 while declining nationally. The report also found that the biomedical cluster has the potential to be an increasing part of the region’s economic foundation.

Using the DWD website’s analytical tools and U.S. Census data, subsectors were selected within manufacturing and health care that have the highest average wages, significant employment opportunities, and skilled occupations. Manufacturing is the largest industry in the region, employing 17.7% of the workforce. Health care encompasses 9.0% of the workforce. While smaller than retail trade’s 11.8% share, it has many more skilled job opportunities and its average wages are much higher.

It should be noted that while subsectors such as Fabricated Metal, Machine Manufacturing, and Electrical Equipment are currently experiencing declining job trend in jobs and aggregate wages, these subsectors are components of the Transportation Equipment Manufacturing Cluster and are likely to benefit from continued growth in the Transportation Equipment subsector.

The primary selection criteria for subsectors were:

- ◆ Average annual wage within the subsector above the average annual wage for all Region 11 industries (\$33,341);
- ◆ Skilled occupations can be found within the subsector; and
- ◆ The subsector represents significant employment opportunity currently or has the potential for significant employment opportunity in the future.

Section 3: Selection and Definition of Critical Occupations and Skill Sets

Occupational Profiles – Manufacturing, Mining, and Utilities⁵

Industrial Machine Maintenance

The Work

Industrial machinery mechanics try to prevent problems before they occur. They inspect machines to make sure they are working properly. They also clean, oil, and grease parts and tighten belts on a regular basis. When problems occur, mechanics talk with machine operators to find out what is wrong. They also check the machines for error messages. Some machines monitor themselves and alert mechanics to where problems may be. Then mechanics inspect the equipment and look for common causes of trouble. They start by looking for loose connections or worn out parts. If they do not find the problem easily, mechanics test the equipment. To test the electrical or mechanical systems, mechanics use special equipment such as voltmeters. Mechanics must take machines apart to run these tests. They analyze the information from tests and discussions with operators to determine what is wrong with the equipment. Then mechanics make adjustments or replace worn parts and put equipment back together. When they are finished, mechanics run machines to see if they work.

In addition to making repairs, mechanics help install new machines. They determine the best process for setting up the machines. They do this by studying blueprints and information from manufacturers. Once the machine is installed, mechanics check that the installation was done correctly. They may enter instructions for computer-controlled machinery. Finally, they demonstrate the equipment to machine operators.

Outlook

Employment for industrial machinery mechanics is expected to grow more slowly than average through the year 2010. Despite the slow growth rate, job openings will occur as current workers leave this occupation. All openings will be created by the replacement of current workers.

Top employing industries are electric power generation, transmission and distribution; machinery, equipment and supplies merchant, wholesalers; and motor vehicle parts manufacturing.

⁵ Sources for occupational profiles: www.learnmoreIndiana.org; <http://www.iseek.org>; Career Pathways Handbook, Jim Cassio, 2005-2006 edition

Employment Trends for Industrial Machinery Mechanics

	Employment		Percent Change	Job Openings ¹
	2002	2012		
United States	197,300	208,300	+ 6 %	5,070
Indiana	5,980	6,380	+ 7 %	160
EGR 11	550	670	+ 22 %	20

¹Job Openings refers to the average annual job openings due to growth and net replacement.

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Indiana Department of Workforce Development, Labor Market Information

Wages

Wage Distribution for Industrial Machinery Mechanics, Hourly and Yearly

Location	Pay Period	2003				
		10%	25%	Median	75%	90%
United States	Hourly	\$12.10	\$14.96	\$18.63	\$22.97	\$27.49
	Yearly	\$25,200	\$31,100	\$38,800	\$47,800	\$57,200
Indiana	Hourly	\$13.74	\$16.60	\$20.06	\$24.58	\$30.76
	Yearly	\$28,600	\$34,500	\$41,700	\$51,100	\$64,000
EGR 11	Hourly	\$13.44	\$15.43	\$18.32	\$26.11	\$31.31
	Yearly	\$27,959	\$32,087	\$38,101	\$54,318	\$65,124

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development, Labor Market Information

While Industrial Machine Mechanics are well paid at \$17.14 per hour on average in Region 11, workers in this region are paid less than in any other major market in the state, which may need to be pursued as a root cause for the shortage.

2004 Wages for Industrial Machinery Mechanics		
	Average Hourly Wage	Average Annual Wage
Indiana	\$21.07	\$43,820
South Bend	\$19.32	\$40,180
Elkhart	\$17.23	\$35,840
Fort Wayne	\$19.78	\$41,150
Lafayette	\$18.39	\$38,240
Indianapolis	\$22.11	\$45,990
Terre Haute	\$17.38	\$36,150
Evansville	\$17.14	\$35,650
National	\$19.28	\$40,090

Entry Skills

Most employers prefer to hire applicants who have a high school diploma or GED. For apprenticeships, applicants must be at least 18 years old. Employers may require applicants to pass a physical exam and drug-screening test. Employers look for applicants who are in good physical condition. They also look for people who have good eye-hand coordination. Experience repairing machinery can be helpful.

Education and Training

Long term on-the-job training is the most typical educational requirement. Most industrial machinery mechanics go through apprenticeship training. To apply for an apprenticeship you must have a high school diploma; and be at least 18 years old. Apprenticeship programs usually consist of three to five years of on-the-job training. In addition, each year you receive at least 144 hours of classroom training.

Related Instructional Programs:

- Heavy/Industrial Equipment Maintenance Technologies, Other
- Industrial Mechanics and Maintenance Technology

Career Paths

Lower Level	Mid-Level	Advanced Level	Options
Machine Operator (short term OJT)	Maintenance Worker, Machinery (Long term OJT)	Industrial Machinery Mechanic (Long term OJT)	Maintenance Supervisor
			Production Supervisor
			Plant Manager

Maintenance and Repair Workers, General

The Work

Maintenance and Repair Worker perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or the structure of an establishment in repair. Duties may involve pipe fitting; boiler making; insulating; welding; machining; carpentry; repairing electrical or mechanical equipment; installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs.

When making repairs, workers inspect the structure or equipment and diagnose the causes of problems. Maintenance workers take apart machines and fix them. This may involve cleaning and lubricating parts. It may also require the replacement of worn or

broken parts. After making repairs, workers reassemble machines and test them. Maintenance workers use various hand and power tools. Some tools are basic, such as hammers, wrenches, and screwdrivers. They may also use machine tools to repair and construct parts.

Maintenance workers repair and maintain systems that control the temperature in buildings. They set and adjust the controls of these systems. In newer buildings, workers maintain computer systems that control temperature and lights. Building maintenance workers have a few administrative tasks. They keep track of work orders and the repair jobs they complete. They also document their purchases and what items cost. Before buying supplies and parts, maintenance workers read blueprints, catalogs, and manuals. They check prices with suppliers and estimate costs of a job.

Outlook

Nationwide, this occupation is expected to grow about as fast as average between now and 2012. Employment is expected to increase with the number of buildings. Job openings will be plentiful due to the need to replace current workers.

Employment Trends for Maintenance and Repair Workers, General

	Employment		Percent Change	Job Openings ¹
	2002	2012		
United States	1,265,600	1,472,400	+ 16 %	44,980
Indiana	29,520	32,550	+ 10 %	870
EGR 11	3,170	3,460	+ 9 %	90

¹Job Openings refers to the average annual job openings due to growth and net replacement.

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Indiana Department of Workforce Development, Labor Market Information

Wages

Wage Distribution for Maintenance & Repair Workers, General, Hourly and Yearly

Location	Pay Period	2003				
		10%	25%	Median	75%	90%
United States	Hourly	\$8.42	\$10.86	\$14.49	\$18.91	\$23.25
	Yearly	\$17,500	\$22,600	\$30,100	\$39,300	\$48,400
Indiana	Hourly	\$9.48	\$11.92	\$15.11	\$18.96	\$23.20
	Yearly	\$19,700	\$24,800	\$31,400	\$39,400	\$48,300
EGR 11	Hourly	\$9.38	\$11.32	\$15.20	\$19.73	\$23.92
	Yearly	\$19,517	\$23,546	\$31,610	\$40,297	\$49,750

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development,

Entry Skills

To work as a mechanic and repairer helper, you must have a high school diploma or GED; complete on-the-job training; and have mechanical aptitude.

Education and Training

The most typical preparation is moderate-term on-the-job training, which means 1 or more years of employer-provided OJT or work-based learning. It may include some formal classroom instruction.

Related instructional programs: Building/Construction Site Management/Supervisor.

Career Paths

Lower Level	Mid-Level	Advanced Level	Options
Helper, Laborer, or Apprentice (short term OJT)	Maintenance Repairer, semi skilled (long term OJT)	Supervisor or foreman (extensive experience)	Skilled Construction Trades Worker
Janitor/Cleaner (short term OJT)		Maintenance Mechanic (long term OJT)	

Maintenance Workers, Machinery

The Work

Maintenance Workers, Machinery lubricate machinery, change parts, or perform other routine machinery maintenance. They set up and operate machine and adjusts controls that regulate operational functions to ensure conformance to specifications; start machines and observe mechanical operation to determine efficiency and to detect defects, malfunctions, or other machine damage; install, replace, or change machine parts and attachments, according to production specifications; replace or repair metal, wood, leather, glass, or other lining in machine or equipment compartments or containers; and dismantle machines, remove machine parts, and reassemble machines, using hand tools, chain falls, jack, cranes, or hoists.

Working conditions for repairers who work in manufacturing are similar to those of production workers. These workers are subject to common shop injuries such as cuts and bruises, and use protective equipment such as hardhats, protective glasses, and safety belts. Industrial machinery installation, repair, and maintenance workers also may face additional hazards because they often work on top of a ladder or underneath or above large machinery in cramped conditions. Industrial machinery installation, repair, and maintenance workers may work independently or as part of a team. They

must work quickly and precisely, because disabled machinery costs a company time and money.

Because factories and other facilities cannot afford breakdowns of industrial machinery, repairers may be called to the plant at night or on weekends for emergency repairs. Overtime is common among industrial machinery installation, repair, and maintenance workers—more than a third work over 40 hours a week. During power outages, workers may be assigned overtime and be required to work in shifts.

Outlook

The outlook for these jobs is equivalent that as Maintenance Repair Workers, General. Industries with the highest level of employment for these workers are local government, plastics production, motor vehicles part manufacturing, and machinery and supply merchant wholesalers.

Applicants with broad skills in machine repair should have favorable job prospects. As more firms introduce automated production equipment, industrial machinery installation, repair, and maintenance workers will be needed to ensure that these machines are properly maintained and consistently in operation. However, many new machines are capable of self-diagnosis, increasing their reliability and, thus, reducing the need for repairers. As a result, the majority of job openings will stem from the need to replace repairers who transfer to other occupations or leave the labor force.

Employment Trends Maintenance Workers, Machinery

United States	Employment		Percent Change	Job Openings ¹
	2002	2012		
United States	91,900	97,200	+ 6 %	2,610
Indiana	2,960	3,100	+ 5 %	80
EGR 11	150	170	+ 13 %	10

¹Job Openings refers to the average annual job openings due to growth and net replacement.

Wages

Wage Distribution for Maintenance Workers, Machinery, Hourly and Yearly

Location	Pay Period	2003				
		10%	25%	Median	75%	90%
United States	Hourly	\$9.49	\$12.14	\$15.73	\$20.10	\$24.42
	Yearly	\$19,700	\$25,300	\$32,700	\$41,800	\$50,800
Indiana	Hourly	\$10.37	\$13.53	\$17.22	\$22.14	\$26.47
	Yearly	\$21,600	\$28,100	\$35,800	\$46,100	\$55,100
EGR 11	Hourly	\$10.14	\$13.60	\$16.68	\$21.12	\$24.59
	Yearly	\$21,095	\$28,292	\$34,685	\$43,921	\$51,144

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development, Labor Market Information

Entry Skills

No previous work-related skill, knowledge, or experience is needed for these occupations. These occupations may require a high school diploma or GED certificate.

Education and Training

The most common job training requirement is short term on-the-job training.

Related Instructional Programs:

- Heavy/Industrial Equipment Maintenance Technologies, Other
- Industrial Mechanics and Maintenance Technology

Career Path

The career path is similar to that of the highly related occupations above.

Registered Nurses

The Work

Registered nurses (RNs) work to promote health and to help patients cope with illness. Nurses work with patients in hospitals, in doctors' offices, and in nursing homes. They work in public health facilities such as government agencies and schools. They also take care of patients in their homes as they recover from illness or accidents. Nurses have a large variety of tasks they can perform. However, the work setting usually determines their daily duties.

Hospital nurses observe patients and carry out medical treatments. They use computerized equipment to monitor patients' vital signs. They record their observations and other medical data in patients' charts. Nurses also consult with medical staff about ways to prevent infection. Sometimes nurses write and manage patient care plans.

Hospital nurses are usually assigned to one area, such as surgery. In these areas they have special duties. For example, surgery nurses prepare rooms and supplies before surgery. They sterilize instruments and prepare other equipment. They also assist surgeons by passing instruments and other items.

Hospital nurses perform many duties that are common to other work settings. For example, they discuss cases with patients' doctors. They maintain a stock of supplies. They also supervise licensed practical nurses and aides.

Office nurses prepare patients for exams and check vital signs. They assist doctors with exams when requested. They draw blood and give injections, as do nurses in most settings. Office nurses may also perform routine lab tests and office work.

Public health nurses work to improve the overall health of communities. They provide health care and first aid. They give shots and screenings such as blood pressure tests. Public health nurses develop health education programs. Thus, they teach the public about topics such as nutrition and childcare. In addition, they refer patients to community agencies.

Outlook

Nationally, the number of jobs for registered nurses is expected to increase faster than average through the year 2012.

Growth in this occupation will be due in part to technological advances that allow more medical problems to be treated. In addition, the number of older people is expected to increase rapidly. Older people are more likely to need medical care.

The number of jobs in hospital nursing is expected to grow more slowly than in other settings. This is because patients are being released earlier from hospitals. Rapid growth is expected in home health care and nursing homes.

Employment Trends for Registered Nurses

	Employment		Percent Change	Job Openings ¹
	2002	2012		
United States	2,284,500	2,907,600	+ 27 %	110,120
Indiana	51,000	63,370	+ 24 %	2,310
EGR 11	4190	5350	+ 28 %	210

¹Job Openings refers to the average annual job openings due to growth and net replacement.

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Indiana Department of Workforce Development, Labor Market Information

Wages

Wage Distribution for Registered nurses, Hourly and Yearly

Location	Pay Period	2003				
		10%	25%	Median	75%	90%
United States	Hourly	\$17.51	\$20.32	\$24.53	\$29.41	\$35.11
	Yearly	\$36,400	\$42,300	\$51,000	\$61,200	\$73,000
Indiana	Hourly	\$15.66	\$18.70	\$21.64	\$25.56	\$28.93
	Yearly	\$32,600	\$38,900	\$45,000	\$53,200	\$60,200
EGR 11	Hourly	\$14.85	\$17.01	\$19.59	\$22.05	\$25.28
	Yearly	\$30,885	\$35,372	\$40,744	\$45,858	\$52,584

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development,

As with manufacturing occupations, average wages for registered nurses is very good, but the Evansville market pays the least of all the major markets in the state.

2004 Wages for Registered Nurses		
	Average Hourly Wage	Average Annual Wage
Indiana	\$22.55	\$46,900
Gary	\$21.12	\$43,930
South Bend	\$21.61	\$44,950
Elkhart	\$25.97	\$54,030
Fort Wayne	\$22.02	\$45,790
Lafayette	\$20.80	\$43,250
Kokomo	\$22.46	\$46,720
Muncie	\$20.02	\$41,650
Indianapolis	\$24.24	\$50,420
Terre Haute	\$21.14	\$43,970
Evansville	\$20.25	\$42,120
National	\$26.06	\$54,210

Entry Skills

To work as a registered nurse, you must graduate from a nursing program; complete supervised clinical work experience; pass a national exam; pass a state licensing exam; be able to work as part of a team; and have good interpersonal skills. Some employers may prefer to hire registered nurses who have a B.S.N. degree. Nursing supervisors are nearly always required to have a B.S.N. degree.

Employers prefer to hire nurses who have a strong desire to help others and a genuine concern for patients' welfare. Because work with the sick and injured can be stressful, employers look for nurses who are emotionally stable.

Education and Training

There are three training options for registered nurses. One, you can earn an associate's degree in nursing (A.D.N.). Community and two-year colleges offer these two-year programs. Two, you can earn a bachelor's of science degree in nursing (B.S.N.). Colleges and universities offer these four-year programs. Three, you can earn a diploma. Hospitals offer these two to three year programs.

In general, graduates of any of the three types of programs qualify for entry-level positions. However, you must also pass national and state exams. Nurses who have a bachelor's degree have more options for jobs.

As a nursing student, you study anatomy, physiology, and chemistry. Near the end of training you complete a supervised work experience in a hospital. During your clinical work experience you work in several hospital departments, such as surgery, emergency, and pediatrics. Registered nurses who have a bachelor's degree have more chances for advancement. Some career paths are open only to nurses with B.S.N. degrees or even advanced degrees.

With experience, registered nurses can advance to assistant head nurse or head nurse. From there, they can advance to higher levels of management. However, many management-level nursing jobs require a graduate degree in nursing or health administration. Within patient care, nurses can advance to nurse practitioner, nurse-midwife, or nurse anesthetist. These specialties require one or two years of graduate school, usually leading to a master's degree. Some nurses move into the business side of health care. For example, they may manage a home health care service. Others teach at colleges or universities.

Related Instructional Programs:

- Adult Health Nurse/Nursing
- Clinical Nurse Specialist
- Critical Care Nursing
- Family Practice Nurse/Nurse Practitioner
- Maternal/Child Health and Neonatal Nurse/Nursing
- Nurse Anesthetist
- Nurse Midwife/Nursing Midwifery
- Nursing Science (MS, PhD)
- Nursing, Other
- Nursing/Registered Nurse (RN, ASN, BSN, MSN)

- Occupational and Environmental Health Nursing
- Pediatric Nurse/Nursing
- Perioperative/Operating Room and Surgical Nurse/Nursing
- Psychiatric/Mental Health Nurse/Nursing
- Public Health/Community Nurse/Nursing

Career Paths

Lower Level	Mid-Level	Advanced Level	Options
Licensed Vocational Nurse (vocational certificate)	Registered Nurse (AA/AS degree)	Director of Nursing (BA/BS + Experience)	Nurse Practitioner
	Physician's Assistant (BA/BS)		Nursing Instructor (MA/MS)

Licensed Practical Nurse

The Work

Licensed practical nurses work under the direction of a doctor or registered nurse. Most LPNs provide basic bedside care to patients. They take vital signs such as temperature, blood pressure, pulse, and respiration. They treat patients for bedsores, give alcohol rubs, and apply dressings. They apply hot water bottles and ice packs. LPNs observe patients and report any negative reactions to treatments or medications. They collect blood and other samples from patients for testing. In some work settings, they perform routine lab tests. LPNs feed patients and record their food and liquid intake and output. They also help patients with other personal care activities, such as bathing, dressing, or brushing their teeth.

In states where the law allows them to, LPNs may give prescribed medications. They may also start intravenous (IV) fluids. Some LPNs help deliver, care for, and feed infants. Experienced LPNs may supervise nursing assistants and aides.

Outlook

Nationally, the number of jobs for licensed practical nurses is expected to grow about as fast as average through the year 2010.

Growth will be in response to the long-term care needs of the rapidly growing population of very old people. In addition, the demand for health care in general is growing as the population increases. Employment in nursing homes is expected to grow faster than average. Nursing homes will offer the most new jobs for LPNs as the number of aged and disabled people in need of long-term care rises. Nursing homes

will also be called on to care for the increasing number of patients released from the hospital who have not recovered enough to return home.

Employment Trends for Licensed Practical and Licensed Vocational Nurses

	Employment		Percent Change	Job Openings ¹
	2002	2012		
United States	701,900	843,700	+ 20 %	29,480
Indiana	15,610	17,620	+ 13 %	540
EGR 11	1650	1830	+ 11 %	60

¹Job Openings refers to the average annual job openings due to growth and net replacement.

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Indiana Department of Workforce Development, Labor Market Information

Wages

Wage Distribution for Licensed Practical and Licensed Vocational Nurses, Hourly and Yearly

	Pay Period	2003				
		10%	25%	Median	75%	90%
United States	Hourly	\$11.53	\$13.43	\$15.92	\$18.97	\$21.78
	Yearly	\$24,000	\$27,900	\$33,100	\$39,500	\$45,300
Indiana	Hourly	\$11.99	\$13.85	\$15.75	\$17.79	\$21.01
	Yearly	\$24,900	\$28,800	\$32,800	\$37,000	\$43,700
EGR 11	Hourly	\$12.07	\$13.85	\$15.41	\$16.81	\$18.00
	Yearly	\$25,111	\$28,817	\$32,062	\$34,972	\$37,446

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Indiana Department of Workforce Development, Labor Market Information

The wages for LPNs are good at an average of \$15.46 per hour in the Evansville area, although most other major labor markets in the state are higher (Muncie and Terre Haute are lower).

2004 Wages for Licensed Practical Nurses		
	Average Hourly Wage	Average Annual Wage
Indiana	\$16.25	\$33,800
Gary	\$16.07	\$33,420
South Bend	\$16.38	\$34,070
Elkhart	\$15.34	\$31,910
Fort Wayne	\$15.97	\$33,210
Lafayette	\$17.01	\$35,390
Kokomo	\$15.47	\$32,170
Muncie	\$14.83	\$30,850
Indianapolis	\$17.62	\$36,640
Terre Haute	\$14.74	\$30,660
Bloomington	\$15.84	\$32,950
Evansville	\$15.46	\$32,150
National	\$16.75	\$34,840

Entry Skills

To work as a licensed practical nurse, you must have a high school diploma or GED; graduate from a practical nursing program; complete supervised clinical work experience; pass a national exam; pass a state licensing exam; have good interpersonal skills; and be able to work as part of a team.

Education and Training

You can get practical nursing training at a professional technical school or two-year college. Some high schools and hospitals also offer this training.

Most practical nursing programs take one year to complete. They include classroom study and supervised clinical practice (patient care). Classroom study includes anatomy, physiology, nutrition, and first aid. As part of your patient care studies, you learn to administer drugs to patients.

Related Instructional Programs: Licensed Practical/Vocational Nurse Training (LPN, LVN, Cert., Dipl, AAS)

Career Path

Lower Level	Mid-Level	Advanced Level	Options
Nurse Aide (short term OJT)	Licensed Vocational Nurse (vocational certificate)	Registered Nurse (AA/ AS degree)	Director of Nursing (BA/BS + Experience)
Home Health Aide (short term OJT)			Health Care Services Administrator

Justification for Selection of Occupations

Demand and earnings for the occupations have been shown throughout the report. Labor market information and data analysis is contained in the appendices. The major reason for selecting the occupations was what we heard from primary data research with our Consortium, who brainstormed occupations with skill shortage at their very first meeting, and primary research with the employers themselves.

The rationale was already discussed in the methodology section (Section 1) and thus will not be repeated here. It should be noted that while the shortages for industrial machine maintenance and maintenance workers, machinery are rather small, the common skills and similar career lattices with maintenance and repair workers make them a natural choice to include.

“Labor economists could once clearly articulate the ‘career ladders’ that workers could use to advance within a given employer or industry if they obtained the requisite education, skills, and experience. In today’s labor markets, this is no longer the case. Several as yet imperfect metaphors are emerging to describe and understand the way labor markets work. Two such metaphors – the ‘career lattice’ and the ‘climbing wall’ – suggest that progression may require some sideways or even downward movement for workers at times as they navigate today’s labor markets. This implies that there may also be related non-linear ‘work-arounds’ for potential skill shortages...

Ray Marshall Center at University of Texas; August, 2005

Section 4: Size and Location of Short and Long Term Occupational Shortages

Estimates of Short and Long Term Shortages

The size of the shortages was estimated using the worksheets for calculating supply, demand, and shortages/surpluses of occupations, which are included in the appendices.

Quantifying the estimated demand for these occupations was complicated by the fact that, as mentioned previously, there are several maintenance-type positions across the Manufacturing, Mining and Utilities sectors. In addition, there are also many maintenance positions that are not related to the sectors of interest. For example, Hospitals and Universities have maintenance employees, however few if any are experienced in Manufacturing-type maintenance and yet they would be counted if occupations weren't screened by sector. This is not the case for the health care fields.

Assumptions

To develop the demand estimates the following assumptions were made:

Manufacturing, Mining, and Utilities

- The demand for skilled people consists of replacing workers that leave as well as new hiring as a result of sector growth. The Manufacturing sector has experienced growth, but it has not been uniform across all subsectors. Therefore the growth rates of selected Manufacturing subsectors were averaged together to estimate the growth of the pool of jobs for the primary occupations for the period from 2000 to 2004. This growth rate was heavily influenced by the historical performance of the Transportation Equipment Manufacturing Subsector which had an 84% percent increase in jobs from 2000 to 2004.
- The selected subsectors averaged annual job growth of 7% during the same period. For this report, Medium performance was estimated to be 3% with an additional 1% for replacements of existing workers. The low estimate was 2% below and the high estimate was 2% above the medium expected performance. These projections used Bureau of Labor employment estimate and projection data from DWD SSI website with a base year of 2002.
- For the manufacturing, mining, and utilities sectors, most of the workers for the selected occupations have a path through an educational institution or apprenticeship program in the region. For the maintenance field occupations, there were about 53 people that exit regional training programs with a degree or certificate each year. Some of these workers are already employed as maintenance

workers while others are new. Supply projections for selected occupations were based upon the output of these programs because many local businesses have developed programs with these institutions to train their workers and keep them up-to-date with changes in technology with levels of certification. So, while someone may be hired into a maintenance position without going through one of the programs discussed, it is very likely that they will as part of their OJT. Therefore the annual output of new trainees from these programs seemed a reasonable proxy to represent the supply of new workers qualified for these occupations.

- In order to develop the Occupation Shortage worksheet for this report, some assumptions were made about worker migration and retention. These assumptions were based upon the telephone interviews. The outgoing migration estimates were based upon the assumption that 10% of the Associates Degree graduates from IVY Tech and V.U. would leave the region and another 1% of all new workers would leave the occupation annually. Incoming migration estimates were that an additional 2% of the annual output from these programs would move into these occupations and that an additional 5% of the annual output would migrate into the region for maintenance jobs.

Selected Occupation Employment Totals For Selected Sectors, 2002 Data

	Manufacturing	Mining	Utilities
Industrial Machine Mechanics (49-9041)	380	0	0
Maintenance and Repair Workers (49-9042)	1,860	90	130
Maintenance Workers, Machinery (49-9043)	30	20	60

Bureau Labor Statistics; Indiana Department of Workforce Development

- The supply of new workers in each occupation was estimated based upon interviews with VU, IVY Tech, Oakland City University and EVSC Career and Technology Center staff. It should be noted that while historically workers in these occupations developed their skills on the job under a mentor, employers are increasingly utilizing programs at the above mentioned institutions which provide a Degree or Certificate of Achievement as the foundation for training new and existing employees. The allocation of new workers was based upon the current size of each occupation and interview responses from those institutions. The table below shows the new worker allocations by source.

Estimated Average Annual Output Of New Workers For Selected Occupation Codes By Source, 2005

	Total	49-9041 (20%)	49-9042 (75%)	49-9043 (5%)
Vincennes University	35	7	26	2
IVY Tech	30	5	23	2
High Schools	3	2	0	1

Health Care

- Interview responses indicated that the RN nursing programs at the local Universities and IVY Tech serve different student bases. For example, it was reported that approximately 75% of U.E. nursing graduates leave the region. This was mainly due to a significant proportion of the student population being from other parts of Indiana. On the other hand, it was reported that approximately 80% of the USI nursing students remain in the region. This was mainly due to a large proportion of the student population being from the region. Similarly, VU has a high proportion of its students coming from the surrounding area; however, because VU is in Knox County it is likely many students come from central Indiana or regions just outside EGR 11. For this reason it was estimated that 33% of VU graduates would leave the region. IVY Tech is a community college with mainly nontraditional students. These students are typically older and have established roots in the community. With this as a framework, it was estimated that all of IVY Tech nursing graduates would stay in the region.
- In addition to the base assumptions about the supply of nurses produced in EGR 11 it was also important to develop a framework to reasonably account for migration into the region and in and out the of the RN occupations. For simplicity, these assumptions were calculated relative to the regional output of RNs. It was assumed that 2% of the graduating nurses would decide not to work as a nurse. These graduates could continue their education pursuing a Master's Degree, pursue some other means of employment or not work. Migration into the region was a common occurrence; in fact, several of those interviewed referred to staff driving from Illinois or Kentucky to work in medical facilities in the region. However, quantifying the annual effect of in-coming migration was difficult. As a means to address this migration, it was assumed that in-coming migration would equal 5% of the total nurse output in the region. Migration into the occupation from other occupations was restricted because only former RNs could migrate into the occupation. For this shift to be considered an in-coming occupation shift and not a regional shift or newly licensed RN, they would have had to have been qualified as an RN and migrated to another occupation or stopped working and then migrate back into an RN occupation. Considering these limitations, it was assumed that those coming back into the RN occupation would be equal to half of those that migrated out, or 1% of annual output.
- LPN retention and migration was addressed in a similar fashion. As mentioned previously, the LPN is a less skilled nurse than a RN and some people use the LPN occupation as a stepping-stone toward a career as a RN. In this region both IVY Tech and VU offer LPN programs. It was reported that all of IVY Tech's graduates were able to find employment in the region, many before graduation. It was assumed that like the RNs from VU, about 33% would find work outside the region. It was also anticipated that migration into the region would equal approximately 5% of total LPN output in region. As with RNs, migration to or from other occupations

was restricted to those that were new LPNs and decided not to work as a nurse, or LPNs that were not working as an LPN and then began to work as an LPN. This issue is further complicated by the fact that some RNs will apply and accept a LPN level position and wage in order to get a better work schedule. However, these nurses are still licensed RNs even though they perform the function of LPN. To account for migration, as with RNs, it was assumed that the region would lose 2% of the total new LPNs due to leaving the occupation, and 1% of nonworking LPNs would re-enter the LPN occupation.

As previously mentioned, the worksheets are contained in the appendices. The chart below summarizes the resulting short and long term shortages:

Short and Long Term Shortage Projections by Occupation in EGR 11

	2006	2012
Industrial Machine Maintenance	6	40
Maintenance and Repair Workers, General	47	391
Maintenance Workers, Machinery	4	14
Registered Nurse	23	347
Licensed Practical Nurse	23	157

Distribution by Geographic Location

Geographic distribution of the occupational shortages was determined by

- Determining the number of workers in each occupation in each county.
- Determining what percent of the occupation works in each county.
- Applying that percentage to the projected total regional percentage in 2006 and in 2012.

Key to the Occupational Code Numbers in County Charts:

Occupation	Code
Industrial Machine Maintenance	49-9041
Maintenance and Repair Workers, General	49-9042
Maintenance Workers, Machinery	49-9043
Registered Nurse	29-1111
Licensed Practical Nurse	29-2061

In the table below, current employment numbers are shown by county for each occupation. There are, for example, 379 industrial machine mechanics in

manufacturing in the region. Dubois County has 102, or 27% of that amount. The 2006 shortage of industrial machine mechanics in manufacturing for 2006 is 6. To determine the shortage in Dubois County's manufacturing firms in 2006, we applied 27% to the shortage and arrived at 1.62. Numbers were adjusted since there can not be fractions of people.

Current Distribution (4th Quarter 2002) of Employment by Occupational Code, by County for Manufacturing, Mining, and Utilities

	Mining			Utilities			Manufacturing		
	49 - 9041	49 - 9042	49 - 9043	49 - 9041	49 - 9042	49 - 9043	49 - 9041	49 - 9042	49 - 9043
Dubois	0	2	0	0	4	2	102	499	8
Gibson	0	19	4	0	25	11	47	230	4
Knox	0	16	4	0	7	3	13	65	1
Perry	d	d	d	0	3	1	14	70	1
Pike	d	d	d	d	d	d	1	7	0
Posey	d	d	d	d	d	d	24	115	2
Spencer	0	5	1	d	d	d	16	80	1
Vanderburgh	d	d	d	0	40	19	134	658	11
Warrick	0	3	1	0	17	8	28	139	2

* A d indicates data were not available due to nondisclosure requirements.
Source: StatsIndiana; IBRC

Short Term Shortages (2006) of Employment by Occupational Code, by County for Manufacturing, Mining, and Utilities

	Mining			Utilities			Manufacturing		
	49 - 9041	49 - 9042	49 - 9043	49 - 9041	49 - 9042	49 - 9043	49 - 9041	49 - 9042	49 - 9043
Dubois	0	0	0	0	0	0	2	11	1
Gibson	0	0	0	0	1	0	1	5	1
Knox	0	0	0	0	0	0	0	2	0
Perry	d	d	d	0	0	0	0	2	0
Pike	d	d	d	d	d	d	0	0	0
Posey	d	d	d	d	d	d	0	3	0
Spencer	0	0	0	d	d	d	0	2	0
Vanderburgh	d	d	d	0	1	0	2	15	2
Warrick	0	0	0	0	0	0	0	3	0

* A d indicates data were not available due to nondisclosure requirements.

Long Term Shortages (2012) of Employment by Occupational Code, by County for Manufacturing, Mining, and Utilities

	Mining			Utilities			Manufacturing		
	49 - 9041	49 - 9042	49 - 9043	49 - 9041	49 - 9042	49 - 9043	49 - 9041	49 - 9042	49 - 9043
Dubois	0	1	0	0	1	0	11	94	1
Gibson	0	4	1	0	5	2	5	43	1
Knox	0	3	1	0	1	0	1	12	0
Perry	d	d	d	0	1	0	2	13	1
Pike	d	d	d	d	D	d	0	0	0
Posey	d	d	d	d	D	d	3	22	1
Spencer	0	1	0	d	D	d	2	15	0
Vanderburgh	D	d	d	0	9	0	14	124	1
Warrick	0	1	0	0	3	1	3	26	0

* A d indicates data were not available due to nondisclosure requirements.

Current Distribution (4th Quarter 2002), Short Term Projections (2006), and Long Term Projections (2012) of Employment by Occupational Code, by County for Health Care

	2002 Jobs		2006 Shortage		2012 Shortage	
	29-1111	29 - 2061	29-1111	29 - 2061	29-1111	29 - 2061
Dubois	417	168	2	2	35	16
Gibson	168	68	1	1	14	6
Knox	565	228	3	3	48	22
Perry	104	42	1	1	9	4
Pike	40	16	0	0	3	2
Posey	68	27	0	0	6	3
Spencer	46	19	0	0	4	2
Vanderburgh	2,435	981	14	14	206	93
Warrick	283	114	2	2	24	11

Section 5: Location and Significance of Critical Skill Gaps

The ERISS survey that was conducted across Indiana in support of this initiative asked employers two questions (among others). One was with regards to the most common skill deficiencies they have found among their current (incumbent) workforce, and the other was with regards to skill deficiencies found among job applicants. The results were organized by industry sector.⁶ Utilities and transportation were combined.

Of the following, which would you consider to be the TWO most common deficiencies among workers now employed in your organization?

Industry: Manufacturing	
Thinking critically and acting logically to solve problems	40 %
Communicating effectively in English	35 %
Math skills	30 %
Learning / understanding / and applying information and analysis	27 %
Reading skills	27 %
Developing positive attitude towards change	25 %
Using technology / tools / and information systems	16 %
Working in teams	10 %
None	5 %
Don't Know	0 %
Industry: Transportation/Utilities	
Thinking critically and acting logically to solve problems	39 %
Communicating effectively in English	34 %
Learning / understanding / and applying information and analysis	34 %
Developing positive attitude towards change	32 %
Reading skills	32 %
Math skills	23 %
Using technology / tools / and information systems	21 %
Working in teams	19 %
Don't Know	4 %
None	4 %
Industry: Health Services	
Thinking critically and acting logically to solve problems	46 %
Communicating effectively in English	28 %
Developing positive attitude towards change	26 %
Reading skills	26 %
Learning / understanding / and applying information and analysis	23 %
Working in teams	17 %
Math skills	13 %
Using technology / tools / and information systems	13 %
Don't Know	3 %
None	1 %

⁶ Mining yielded too small a sample to be of any significance.

The most commonly identified skill deficiency among current workers in manufacturing, utilities, and health services was critical thinking skills. The second most common in all three was the ability to communicate effectively in English.

Of the following, which would you consider to be the TWO most common deficiencies among recent applicants for jobs in your organization?

Industry: Manufacturing	
Developing positive attitude towards change	26 %
Thinking critically and acting logically to solve problems	25 %
Learning / understanding / and applying information and analysis	22 %
Math skills	19 %
Communicating effectively in English	18 %
Using technology / tools / and information systems	14 %
None	13 %
Reading skills	12 %
Working in teams	11 %
Don't Know	7 %

Industry: Transportation/Utilities	
Developing positive attitude towards change	28 %
None	19 %
Thinking critically and acting logically to solve problems	18 %
Communicating effectively in English	16 %
Using technology / tools / and information systems	16 %
Don't Know	13 %
Learning / understanding / and applying information and analysis	11 %
Math skills	10 %
Working in teams	7 %
Reading skills	5 %

Industry: Health Services	
Developing positive attitude towards change	36 %
Thinking critically and acting logically to solve problems	31 %
Working in teams	24 %
Learning / understanding / and applying information and analysis	20 %
None	17 %
Using technology / tools / and information systems	13 %
Communicating effectively in English	12 %
Reading skills	12 %
Don't Know	7 %
Math skills	7 %

The most common skill deficiency identified among job applicants for all three industries was “developing positive attitude towards change,” closely followed by critical thinking. Technical skill deficiencies were not nearly as common as these less tangible kinds of skills.

Unfortunately, the skill descriptors used by ERISS are not consistent with the skill descriptors used by ONET. The skills required for each occupation were examined in ONET for six categories: basic skills, social skills, resource management, systems skills, technical skills, and complex problem solving skills. “Critical thinking” appeared as a major skill requirement for three of the five targeted occupations, and as shown above, critical thinking was the most commonly identified skill shortage for both incumbent workers and job applicants. **Critical thinking skills should thus be prioritized as a skill deficit to be resolved.** The health care occupations are more likely to require basic skills and social skills, while the manufacturing occupations are heavily dependent on technical skills. It immediately becomes clear why workers who were successful in one industry but become dislocated are not necessarily easily trained to fill shortages in different industries.

ONET Skill Requirements for Targeted Occupations

	49-9041	49-9042	49-9043	29-1111	29-2061
Basic Skills					
Active Learning					X
Active listening		X		X	X
Critical Thinking		X		X	X
Speaking				X	X
Reading Comprehension		X	X	X	X
Learning Strategies					
Writing				X	X
Science					
Monitoring				X	X
Mathematics					
Social Skills					
Instructing				X	
Social Perceptiveness				X	
Service Orientation				X	X
Coordination		X			
Negotiation					
Persuasion					
Resource Management					
Mgt of Personnel					
Time Mgmt				X	X
Mgmt of Materials					
Financial Management					
Systems Skills					
Judgment and Decision making					X
Systems Analysis					
Systems Evaluation					

	49-9041	49-9042	49-9043	29-1111	29-2061
Technical Skills					
Operation Monitoring	X	X	X		
Troubleshooting	X	X	X		
Equipment Selection	X	X	X		
Operation and Control	X		X		
Equipment Maintenance	X	X	X		
Quality Control Analysis			X		
Installation	X	X	X		
Repairing	X	X	X		
Operations Analysis					
Programming					
Technology Design			X		
Complex Problem Solving Skills					
Complex Problem Solving					

If we apply the skills required for the various occupations to the counties where there are short or long-term shortages for each, we can determine the location of skill shortages, not just occupational shortages. Essentially, the counties share all the same skill deficits with a few exceptions. Since Pike does not have short or long term shortages of any manufacturing, mining, or utilities occupations, it does not have technical skill shortages or a shortage of coordination abilities (from the social skill set). Knox, Spencer, and Warrick do not have short or long term shortages of maintenance workers, machinery, so they have no shortage of operation and control, quality control analysis, or technology design skills (skills that are unique to that occupation among the targeted occupations).

Shortage of ONET Skill Requirements for Targeted Occupations by County

	Du-Bois	Gibson	Knox	Perry	Pike	Posey	Spencer	Vanderburg	Warrick
Basic Skills									
Active Learning	X	X	X	X	X	X	X	X	X
Active listening	X	X	X	X	X	X	X	X	X
Critical Thinking	X	X	X	X	X	X	X	X	X
Speaking	X	X	X	X	X	X	X	X	X
Reading Comprehension	X	X	X	X	X	X	X	X	X
Learning Strategies									
Writing	X	X	X	X	X	X	X	X	X
Science									
Monitoring	X	X	X	X	X	X	X	X	X
Mathematics									
Social Skills									
Instructing	X	X	X	X	X	X	X	X	X
Social Perceptiveness	X	X	X	X	X	X	X	X	X
Service Orientation	X	X	X	X	X	X	X	X	X
Coordination	X	X	X	X		X	X	X	X
Negotiation									
Persuasion									

	Du-Bois	Gib-son	Knox	Perry	Pike	Posey	Spencer	Van-derbg	War-rick
Resource Management									
Mgt of Personnel									
Time Mgmt	X	X	X	X	X	X	X	X	X
Mgmt of Materials									
Financial Management									
Systems Skills									
Judgment and Decision making	X	X	X	X	X	X	X	X	X
Systems Analysis									
Systems Evaluation									
Technical Skills									
Operation Monitoring	X	X	X	X		X	X	X	X
Troubleshooting	X	X	X	X		X	X	X	X
Equipment Selection	X	X	X	X		X	X	X	X
Operation and Control	X	X	X	X		X	X	X	X
Equipment Maintenance	X	X	X	X		X	X	X	X
Quality Control Analysis	X	X		X		X		X	
Installation	X	X	X	X		X	X	X	X
Repairing	X	X	X	X		X	X	X	X
Operations Analysis									
Programming									
Technology Design	X	X		X		X		X	
Complex Problem Solving Skills									
Complex Problem Solving									

Section 6: Regional Coalition and Industry Partner Engagement

The Consortium consisted of 71 representatives from the following areas in EGR 11: 34% Business/Industry, 21% Education/Training, 18% Economic Development, 17% Workforce Development and 10% Local Government Officials and first met on October 4, 2005. The Consortium was introduced to the purpose, components, and sequencing of the SSI project. The members were given the opportunity to prioritize occupational clusters with respect to current or potential future skill shortages. Advanced Manufacturing and Health Care Services were given the highest priority by 46% and 36% by those in attendance, respectively.

During the research process, the SSI Lead Team, a core group of Consortium members, was kept apprised of research progress and findings. Various members of the Consortium participated in interview and focus group activities undertaken as part of the skill shortage identification research.

The Consortium and Validation Team reviewed the report prior to submission to Indiana Department of Workforce Development. The Validation Team Consisted of Dr. Mohammed Khayum, Dean of College of Business, University of Southern Indiana and Dr Darrin Sorrells, Dean of School of Business, Oakland City University.

The Appendices contain the regional Consortium membership and Interview contact and respondent list which demonstrates participation from across the entire region.